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ABSTRACT

During 1987, five studies were conducted to evaluate the changes in child nutrition related knowledge, attitudes, and behavioral outcomes of participants in the Texas Nutrition Education and Training (NET) Program. Because the majority of statistically evaluated and criterion-referenced outcomes were positive, these studies helped demonstrate program effectiveness. Improving coordination with related programs and evaluating alternatives for amplifying effects on participant behavior emerged as strategic directions for program planning and development. Appended reports provide information on the program's background, purpose and procedures, results, and recommended avenues for improvement. The reports describe: (1) performance of NET workshops; (2) behavioral outcomes of advanced menu planning workshops; (3) profiles of NET library patrons; (4) use of nutrition education materials; and (5) participation in the NET program. (Author/JD)

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FINAL EVALUATION REPORT: fiscal year 1987

Performance of the Texas Nutrition Education and Training (NET) Program: October 1986 through September 1987

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Abstract

Five studies were conducted to evaluate changes in child nutrition related knowledge, attitudes, and behavior of participants in the Texas Nutrition Education and Training (NET) Program during 1987. Because the majority of statistically evaluated and criterion referenced outcomes were positive, these studies helped demonstrate program effectiveness. Improving coordination with related programs and evaluating alternatives for amplifying effects on participant behavior emerged as strategic directions for program planning and development.

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EXECUTIVE SUMMARY

The Nutrition Education and Training (NET) Program facilitated positive change in child nutrition related knowledge and attitudes of substantial numbers of children, educators, and food service personnel in schools and child care facilities in Texas during 1987.

	Outcome Indicators Monitored			Number	
Target Group	Knowledge	Attitudes	Behavior	Study Participants	Persons Reached
CHILDREN	+ **	+ /	-	300	6,800
EDUCATORS					
Schools		+	- /	20	900
Child Care					890
FOOD SERVICE PERSONNEL					
Schools					770
Child Care	+ **	+ **	- /	140	1,150
PARENTS & OTHERS					350

Criterion referenced analyses: + + = ideal + = acceptable - = needs improvement
Statistical comparisons: ** = significantly positive / = nonsignificant

EXECUTIVE SUMMARY

The Nutrition Education and Training (NET) Program combines with reimbursement elements of the U.S. Department of Agriculture's Child Nutrition Programs to improve children's nutritional status by providing opportunities for them to learn about and to practice healthy eating habits in schools and child care settings. Texas NET Program staff develop and conduct workshops, provide lending library services, and distribute relevant materials to educators, food service personnel, and children in schools and child care facilities. Evaluations of these activities are conducted annually to compile information about program successes, identify areas where improvements can be made, and determine strategic directions for program development.

Purpose. During 1987, five studies were conducted to evaluate knowledge, attitude, and behavioral outcomes of the NET Program. Different methods (e.g., pre/posttesting, comparison of Daily Menu Records before and after menu planning workshops, and mailed survey of NET library patrons) were used to identify strengths and weaknesses of specific program activities. In the present study, results of these five were integrated to produce an index and analysis of overall program performance.

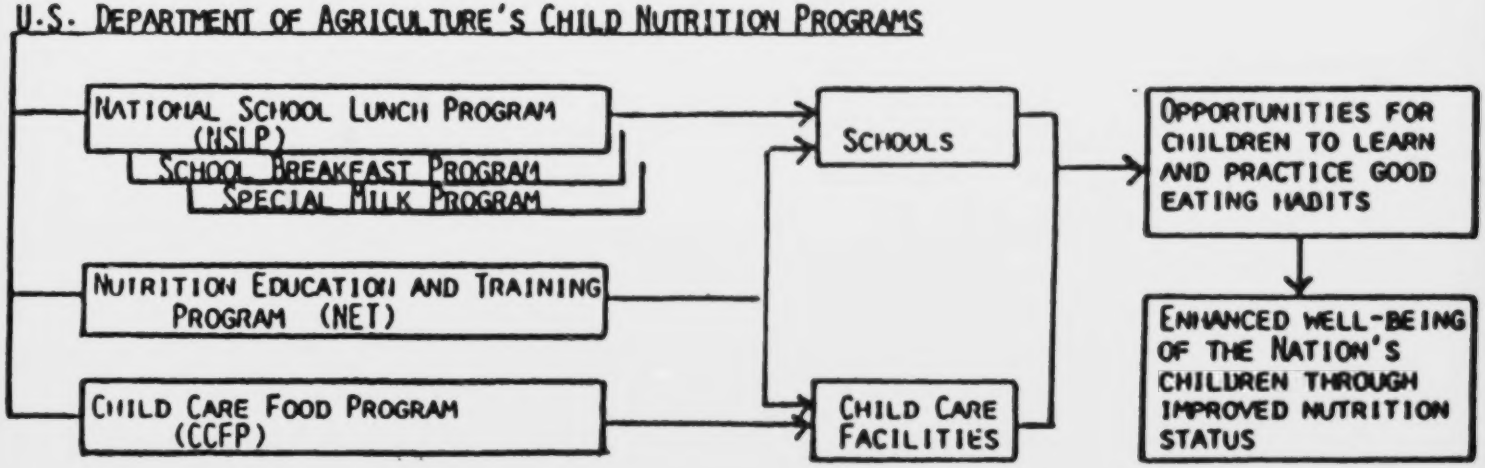
Results. Five of eight statistically evaluated program outcomes were significantly positive, and none were negative. Of 18 criterion referenced comparisons, 12 were positive. Participation was 50 percent greater during 1987 than in the baseline year of 1985. Child nutrition related knowledge and attitudes of educators and food service personnel were significantly better after NET workshops than before. The NET media catalog and publicity in NET workshops and child care journals were successful in reaching school and child care personnel with information about the lending library. Teachers in public schools responded favorably to new curriculum materials. When these teachers integrated nutrition learning activities into classroom instruction, the result was significant improvement in children's nutrition knowledge.

There still is room for improvement, however. Workshops did not improve menu planning and related record keeping in Child Care Food Program facilities. The number of school and child care personnel using the NET library is only a fraction of the 10,000+ potentiated by its publicity efforts. Neither workshops nor turnaround sessions for teachers had strong facilitating effects on use of nutrition curriculum materials. Children's food choices remained problematic despite positive changes in their knowledge.

Conclusions and Recommendations. In addition to demonstrating program effectiveness and identifying need for continued support of the NET Program, these results suggest strategic directions for program development. The NET Program can continue to increase its impact by 1) emphasizing improved coordination with related programs and 2) evaluating alternatives for amplifying effects on participant behavior.

BACKGROUND

The Nutrition Education and Training (NET) Program combines with reimbursement elements of the U.S. Department of Agriculture's Child Nutrition Programs to improve children's nutritional status by providing them with opportunities to learn about and to practice healthy eating habits in schools and child care settings.


U.S. DEPARTMENT OF AGRICULTURE'S CHILD NUTRITION PROGRAMS
NATIONAL SCHOOL LUNCH PROGRAM (NSLP)
SCHOOL BREAKFAST PROGRAM
SPECIAL MILK PROGRAM
NUTRITION EDUCATION AND TRAINING PROGRAM (NET)
CHILD CARE FOOD PROGRAM (CCFP)
SCHOOLS
CHILD CARE FACILITIES
OPPORTUNITIES FOR CHILDREN TO LEARN AND PRACTICE GOOD EATING HABITS
ENHANCED WELL-BEING OF THE NATION'S CHILDREN THROUGH IMPROVED NUTRITION STATUS

BACKGROUND

The Nutrition Education and Training (NET) Program is one of the U.S. Department of Agriculture's (USDA) Child Nutrition Programs. Its goal, like that of its sister programs, is optimal health and well being of the Nation's children through improved nutrition. The National School Lunch (NSLP), School Breakfast (SBP), Special Milk, and Child Care Food (CCFP) programs reimburse nonprofit schools and child care facilities for serving meals and supplements that meet USDA's nutrition and food service requirements. The NET Program provides nutrition information and instructional resources for children and for key individuals in their learning environments. In combination, the instructional and reimbursement programs improve children's nutritional status by assuring that they have opportunities to learn about and to practice healthy eating habits in schools and child care facilities.

Texas NET staff develop and conduct WORKSHOPS, provide lending LIBRARY services, and acquire and distribute nutrition education and food service management MATERIALS designed to:

* reach children with information about the nutritional value of foods and the relationships among food, nutrition, and health;

* help integrate effective nutrition learning activities into instruction at all grade levels from preschool through high school;

* assure that nutritious, appealing, and safe meals and supplements are served in schools and child care facilities; and

* provide support for effective nutrition education and food service management practices in schools and child care facilities.

NET is administered through grants to State agencies. The Texas Department of Human Services (DHS) became active in the NET Program in 1979, receiving a grant from the Texas Education Agency (TEA) to expand the public school based program into child care facilities. In 1982, when federal funding was reduced from $15 million to $5 million nationwide, DHS assumed responsibility for all Texas NET Program activities. The program currently is administered through DHS's Food Services Programs which also administers NSLP and SBP as they apply in nonprofit private schools, CCFP, and the Summer Food Service Program.

Federal regulations governing NET require that the program: 1) be coordinated at the state level by a nutrition education specialist; 2) maintain accurate and unduplicated counts of program participation; and 3) use results of annual evaluations and needs assessments in developing and amending the State Plan for achieving program objectives.

PURPOSE

Evaluations of the Texas NET Program are conducted annually to compile information about program successes, identify areas where improvements can be made, and determine strategic directions for program development.

Key questions to be answered in this study:

* Was overall effect of the Texas NET Program in 1987 positive, negative, or nonsignificant?

* Did the Texas NET Program promote positive changes in child nutrition related knowledge, attitudes, and/or behaviors in NET's priority populations?

* What were relative strengths and weaknesses of overall program performance?

PURPOSE

In order to meet federal requirements for program evaluation and to collect information to help make the program as effective as possible, formal evaluation of the Texas NET Program was initiated in October 1984. A number of studies have been conducted each year since then to provide information the General Accounting Office (GAO, 1982) cited as necessary to:

* effectively administer the program;

* guide program revision and planning;

* ensure that federal funds are spent effectively; and

* supply USDA with data to submit to Congress to aid in apportioning scarce resources.

During 1987, five studies were conducted to answer questions about effects of specific NET program activities:

1) How well did **Sanitation and Health** and **Advanced Menu Planning** workshops perform in helping CCFP participants master child nutrition related knowledge and attitude learning objectives?

2) Did training provided in the **Advanced Menu Planning** workshop increase participants' compliance with CCFP menu planning and record keeping requirements?

3) Are there differences in profiles and preferences of groups of NET library patrons that can be leveraged to increase use of the collection in NET's priority populations without exceeding the program's ability to respond to demand for service?

4) What are relative costs and effects of workshops, turnaround sessions, and simple notification as strategies for promoting use of nutrition education materials in elementary schools? and

5) To what extent did the Texas NET Program achieve its participation goals for 1987?

The separate studies served as close-up "snapshots" of strengths and weaknesses of specific program activities. In the present study, results of these five studies were combined to produce an index and analysis of overall program performance during Fiscal Year 1987. By integrating results across studies, a program "panorama" was developed to summarize program effectiveness and produce recommendations to aid strategic planning.

Key questions answered in this final analysis of data collected during 1987 were:

1) Was the program effective in improving child-nutrition-related knowledge, attitudes, and behavior of substantial numbers of individuals in NET's priority populations? and

2) What were relative strengths and weaknesses of overall program performance?

PROCEDURES

In this study, results of five evaluations of specific NET activities were integrated to develop an index and analysis of overall program performance during 1987.

NET Activity: Outcome Idicators	Study	Data Collection and Analysis Procedures
WORKSHOPS:		
Knowledge Tests	1a	Single group (n=30/workshop) repeated measures (pre/post/followup) analysis of variance
Attitude Scales	1b	Single group (n=50/workshop) repeated measures (retrospective-pretest/posttest) analysis of variance
Compliance with Daily Menu Records	2	Between (workshop/comparison groups) within (before/after) analysis of variance (n=20 menus/group/time)
LIBRARY		
Mailed Survey	3	Qualitative comparison of profiles and preferences of NET library patrons in different population groups (n=93)
MATERIALS		
Levels of Use Questionnaire	4a	Analysis of variance in groups of teachers who learned about the materials in workshops, turnaround sessions, or notification (n=6/group)
Learner Outcomes: Knowledge Tests/ Attitude Scales	4b	Analysis of covariance of knowledge and attitude test scores after 10 weeks of instruction in kindergarten and third grade classes (n>100/test).
Food Choices	4c	Chi-square analyses of "good" food choices made in kindergarten and third grade classes (n>300)
PARTICIPATION	5	Goal-percentaging by population groups and by NET activities
OVERALL	6	Voting method for meta-analysis across all five studies

PROCEDURES

In order to develop information about overall effectiveness of the Texas NET Program during 1987, the meta-analysis procedure referred to as the voting method was applied to integrate results of separate studies of specific NET activities. These studies included the following data collection and analysis procedures:

1) Workshop effects on child nutrition related knowledge and attitudes were evaluated by comparing performance on paper-and-pencil tests administered before and after **Sanitation and Health** and **Advanced Menu Planning** workshops. Repeated measures analysis of variance was used to evaluate statistical reliability of changes in test scores across the time series.

2) Effects the **Advanced Menu Planning** workshop had on participant behavior were evaluated by comparing completeness and accuracy of Daily Menu Records (Form 1530) prepared in CCFP facilities before and after workshops and in groups that did and did not take part in the training. Statistical significance of observed differences was tested in between-within analysis of variance.

3) Relative strengths and weaknesses of lending library services were assessed in a mailed survey of NET library patrons.

4a) The impact of classroom nutrition instruction on children's nutrition knowledge and attitudes was measured with paper-and-pencil tests administered in kindergarten and third grade classes at the beginning and end of the fall semester. Separate analyses of covariance were performed on posttests using pretests as covariate.

4b) Effects of classroom instruction on children's nutrition related behavior were measured in a food choice activity. Separate chi-square analyses were used to evaluate differences in frequency of "good" choices by grade level (kindergarten and third grade), degree of curriculum implementation (high vs low fidelity use of the specified nutrition curriculum), and type of teacher training (workshop, turnaround, or notification).

4c) Relative effects of different types of teacher training on curriculum implementation were assessed by comparing responses to a questionnaire administered to teachers in the three training groups.

5) Upduplicated counts of program participants were submitted to goal-percentaging procedures to evaluate program participation.

In addition to the normative comparisons described above, criterion references were established. The criterion for "acceptable" performance was 70 percent of the maximum possible score and the "ideal" score was at least 90 percent of maximum.

To apply the voting method for integrating results across studies, counts were made of all findings that were positive, negative, or nonsignificant. Tallies were compared and the modal category accepted as giving the best estimate of NET program effectiveness.

RESULTS

Despite decrease in staff size, there were increases in the number of workshops conducted, the number of library items circulated per month, the number of materials distributed, and the number of persons reached with NET Program resources in 1987.

	FY85	FY86	FY87
Resources			
BUDGET	294,060	294,060	295,860
STAFFING			
Coordinator	1.000	.300	.125
Program Specialists	2.000	1.500	2.000
Evaluator	1.000	1.000	1.000
Clerical Support	3.000	2.670	3.000
Consulting Nutritionists	2.000	1.900	1.800
	9.000	7.370	7.925
Activities			
WORKSHOPS			
Developed	2	2	3
Conducted	165	145	185
Persons Reached	2,320	1,940	5,250
LIBRARY			
Acquisitions			500
Items Circulated/Month	70	100	100
Borrowers/Month	6	25	20
Catalogs Distributed	10,000	12,000	680
Persons Reached	3,900	6,980	5,500
MATERIALS			
Acquisitions	5	5	15
Items Distributed	9,700	10,800	12,800
SPECIAL PROJECTS			
Mini-grants/Development Contracts	3	3	2
Evaluation/Needs Assessment Studies	6	7	6
Persons Reached	-	750	-

RESULTS

NET Program funding levels increased slightly, staffing decreased, and productivity remained high during 1987. NET funding is based on the number of children attending public schools in the state. In Texas, that number grew from 2,884,000 in 1985 to 3,209,500 in 1987 with the consequent increase in program budget from 294,060 to 295,860.

At the same time, organizational constraints generated a reduction in NET staffing from nine full-time equivalent positions in 1985 (one coordinator, two program specialists, one evaluator, three clerical and administrative support staff, and 20 consulting nutritionists at approximately 1/10 of full-time) to approximately eight in 1987 (there was a loss of 7/8 of the coordinator's time and a decrease to 18 consulting nutritionists).

Despite decrease in staff size, there were increases in the number of workshops conducted, the number of library items circulated per month, and the number of materials distributed. In consequence of this high level of productivity, the number of persons reached with NET resources was approximately 50 percent greater in 1987 than in 1985. In 1987 there were 10,900 participants in the NET Program compared with 6,200 in 1985.

The NET Effect was Positive

The majority of statistically evaluated and criterion referenced outcomes of NET Program activities in 1987 were positive.

	Outcome Indicators Monitored		
Activities Evaluated	Knowledge	Attitudes	Behavior
WORKSHOPS			
Sanitation and Health	+ **	+ + **	
Advanced Menu Planning	+ + **	+ **	- /
LIBRARY			
Workshop Coverage	+	+	-
Lending Procedures		-	+
MATERIALS			
Use by Teachers		+	- /
Effects on Children	+ **	+ /	-
PARTICIPATION			
Children			+ +
Educators			+
Food Service Personnel			-

Criterion referenced analyses: + + = ideal + = acceptable - = needs improvement
Statistical comparisons: ** = significantly positive / = nonsignificant

Effectiveness of the NET Program in 1987

When data were integrated across the five evaluation studies conducted during 1987, results indicated a positive overall effect of the Texas NET Program. Five of eight statistically evaluated program outcomes were significantly positive, and none were negative. Of 18 criterion referenced comparisons, 12 were positive.

WORKSHOPS were effective in promoting positive changes in child nutrition related knowledge and attitudes of educators and child care food service personnel. In all four analyses of workshop test results, performance on follow-up tests was acceptable (i.e., the average score on the follow-up test was at least 70 percent of the maximum possible score) and significantly better than before the workshop. However, there still was room for improvement. A study of CCFP Daily Menu Records showed no improvements in menu planning behavior from before to after the **Advanced Menu Planning** workshop. Before and after the workshop, more than half the menus failed to satisfy CCFP meal pattern requirements.

Efforts to promote use of the lending LIBRARY collection were sporadically successful. Covering the library as a topic in NET workshops helped establish favorable knowledge and attitudes about the collection but fell short of actually increasing use of the collection. Although 40 percent of child care personnel who are library patrons indicated they had learned of the library during NET workshops, more than half of all NET library users are from populations other than school and child care personnel. Results of studies conducted in previous years indicate, in fact, that less than one percent of NET workshop participants become NET library patrons.

The study conducted in public school classrooms showed that nutrition instruction is effective in promoting children's nutrition knowledge. In a food choices activity, however, the vast majority of children failed to select "good" snack items irrespective of the fidelity of nutrition curriculum implementation and irrespective of how well their class performed on nutrition knowledge and attitude tests.

Although the teachers who participated in this study were receptive to new MATERIALS to support nutrition instruction, curriculum implementation in most classes failed to match the apriori model of effective use of the material, regardless of the type of teacher training (i.e., brief workshop, turnaround, or simple notification).

Evaluation of program PARTICIPATION showed an average of 70 percent goal attainment during 1987. The program was especially strong in reaching children, principally because of the **Honey Bees Buzz for Good Nutrition** workshop for children. Forty-five percent of NET Program participants during 1987 were staff of public and private schools and 55 percent were from child care settings.

Workshops Facilitated Knowledge and Attitude Change

Scores on tests of child nutrition related knowledge and attitudes were significantly higher after **Sanitation and Health** and **Advanced Menu Planning** workshops.

	Average Scores				
	Knowledge Tests			Attitude Scales	
Workshop	Before	During	After	Before	After
Sanitation and Health	62	80	87	4.2	4.6
Advanced Menu Planning	67	83	92	4.0	4.3

Workshop Effects on Knowledge and Attitudes

During 1987, more than 1,100 individuals participated in either the **Sanitation and Health** or **Advanced Menu Planning** workshops. Approximately 820 or 70 percent of these participants were from CCFP facilities. Half of these were educators (including child care center directors) and half were food service personnel (including day home providers and sponsors).

Participants indicated high levels of satisfaction with the workshops and showed significant improvement in knowledge test and attitude scale scores. On the workshop evaluation form administered at the close of the workshops, average ratings were 3.5 to 3.7 on the four-point participant satisfaction scale. Changes in knowledge and attitudes from before to after the workshop were not only statistically significant but brought scores above preset criteria for acceptable levels of knowledge and favorable attitudes.

After the **Sanitation and Health** workshop, average knowledge test performance was 87 percent correct. This score exceeded the criterion for acceptable performance but fell just short of the 90 percent needed to reflect mastery. Mastery level performance was achieved, however, with the attitude scale. The average posttest score was 4.6, indicating that, after the **Sanitation and Health** workshop, participants had a strong desire to maintain the highest level of cleanliness in food service operations.

The learning pattern was reversed in the **Advanced Menu Planning** workshop. The average score on the follow-up test of nutrition knowledge was above 90 percent correct, indicating mastery of concepts and skills needed to plan menus to meet meal pattern requirements and correctly complete daily menu records. Attitude scores were above 4.0 but less than 4.5. Although acceptably positive, attitudes were not strongly positive toward toward menu planning and food purchasing practices discussed or recommended in the workshop.

More detail about effects these workshops had on participants' knowledge and attitudes can be found in the evaluation report entitled **Performance of NET Program Workshops** included as appendix A to this report.

Workshops Had No Immediate Impact on Menu Planning Behavior

The pattern of strengths and weaknesses in menu planning and record keeping was the same before and after the workshops in groups of CCFP centers that did and did not participate in the training.

Average Scores on Evaluation Scales with Maximum Value of 4

	Workshop (17 centers)			Comparison (14 centers)			
Behavioral Objective	(n=85) Before	(n=81) After 6	(n=78) After 12	(n=69) Before	(n=63) After 6	(n=64) After 12	(n=440) Overall
1530 PROPERLY COMPLETED:							
Items fully described	3.64	3.58	3.58	3.61	3.74	3.66	3.63
Quantities specified	3.31	3.30	3.72	3.38	3.45	3.31	3.35
MEAL PATTERNS SATISFIED:							
Components present	3.99	3.91	3.94	3.90	3.97	3.97	3.95
Amounts adequate *	2.97	2.55	2.34	2.57	2.56	2.53	2.59
COMBINED CRITERIA *	3.56	3.43	3.35	3.39	3.42	3.34	3.43
*	n=33	n=33	n=33	n=27	n=27	n=25	n=178

n's for these dimensions include only those records for which amounts could be determined

Impact of Workshops on Menu Planning Behavior

Evaluation of Daily Menu Records (Form 1530) confirmed findings of administrative reviews in the Child Care Food Program (CCFP): the majority of providers had difficulty planning menus to meet meal pattern requirements. These difficulties persisted even after they participated in the NET Program's **Advanced Menu Planning** workshop.

Approximately 60 percent of the 440 Menu Records examined in this study were improperly completed. Providers were reasonably consistent about fully describing food items included in the menu. The average score on this dimension was 3.63 out of a possible 4 points. Scores for quantities specified were slightly less satisfactory. The overall average was 3.35, indicating that most menus supplied inadequate information for at least one meal component. Examples of entries that were considered inadequate were "1 can", "5 hamburger patties", and "3 cartons of milk."

Eighty-five percent of the records failed to satisfy meal pattern requirements. The most frequently occurring problems concerned food quantities. The average "components" score was 3.95 out of a possible 4 points, indicating that all required meal components were present in nearly all records. The average "amounts" score, however, was only 2.59, indicating that quantities were inadequate for at least one and sometimes two or more of the meal components. That means that in the majority of child care centers represented in this study, amounts of food served were not sufficient to give children the nutrients they need for proper growth and health.

There were no significant differences in Menu Records before and after the workshop. Scores on some dimensions appeared to rise slightly from before to after the workshop (e.g., scores for quantities specified rose from 3.31 to 3.72) while others declined (e.g., scores for amounts prepared declined from 2.97 to 2.34). But these changes were not statistically significant. Nor were there significant differences between groups that did and did not participate in the workshop. Twelve weeks after the workshop, average scores were 3.35 and 3.34 in workshop and comparison groups, respectively.

More detail about problems detected in Daily Menu Records can be found in the evaluation report entitled **Behavioral Outcomes of the Advanced Menu Planning Workshop** included as appendix B to this report.

Profiles Differed Across Groups of Library Patrons

Although child care and school personnel make up less than half the total of NET library patrons, there are slight differences between them and other groups of patrons that can be leveraged to promote increased use of the library in these priorty populations.

Dominant Characteristics of NET Library Patrons

	Priority Populations: Schools and Child Care (n=41)	Other Groups: Gov't Agencies, Health Care (n=52)
Job	Educator	Nutritionist
Use NET Collection	2-5 times per year	2-5 times per year
Other Resources Used	Public Libraries and Education Service Centers	Universities
Source of Information about NET Collection	Catalog and workshops	Colleagues and catalog
Perceived Barriers to Increased Use	Inconvenience of lending procedures	Materails not sufficient for their purposes

Characteristics of NET Library Patrons

Approximately 45 percent of library patrons who returned survey questionnaires in 1987 were child care and school personnel. Most of the other 55 percent of NET library patrons were representatives of government agencies (e.g., DHS, Texas Department of Mental Health and Mental Retardation, universities) and individuals working in health care settings.

Although their borrowing patterns were similar, library patrons in NET's priority populations had a different profile from those of other library users. Nearly three-fourths of patrons from schools and child care facilities are educators. Substantial numbers (40 to 75 percent) of them learned about the library through receipt of the catalog and in NET workshops. They use the library two to five times a year. They use the catalog. They do not use materials published in Spanish. They rely on public libraries (55 percent of child care personnel) and education service centers (40 percent of school personnel) for additional nutrition education materials. Their principal complaint against the NET library is that its lending procedures are inconvenient This problem was cited by 40 percent of school and child care personnel. They are concerned about what they perceive as long lead times and excessive paper work.

The profile for other library patrons shows them to be nutritionists. Colleagues are their principal source of information about the NET library. Like those in NET's priority populations, they use the library two to five times a year, use the catalog, and do not use materials published in Spanish. They rely on universities as a source of additional nutrition education materials. Their principal complaint against the NET lending library is that the materials are not sufficient for their purposes. Fifty percent of those representing government agencies and 30 percent of those in health care settings listed this factor as a barrier to their use of the collection.

More information about characteristics of NET library patrons can be found in the evaluation report entitled **Profiles of NET Library Patrons** included as appendix C to this report.

Notification Promoted Effective Use of Nutrition Materials

Teacher and learner outcomes in the notification group were as good as or better than in workshop and turnaround groups.

	Average Scores						
	Teachers (n = 19)		Children (n > 300)				
Strategy	Acceptance	Use	Knowledge		Attitude		Food Choices
Workshop	4.3	4.2	11	16	27	25	20
Turnaround	3.5	3.9	11	14	24	24	20
Notification	3.8	3.1	10	17	26	28	30
Scale Maximum	5	7	20		33		100
Criterion	4	5	14		24		70

Effects of New Materials

Relative effectiveness of workshops, turnaround sessions, and simple notification as strategies for promoting effective use of nutrition education materials was evaluated by comparing 1) teacher's acceptance and use of the new materials and 2) students' nutrition knowledge, attitudes, and food choices. Data were collected in kindergarten and third grade classes on four campuses in the Austin Independent School District (AISD). The curriculum materials used in this study (Health Objectives in Nutrition Education for Youth: HONEY) were developed by an AISD project team whose work was supported through a NET Program mini-grant.

Across groups, teachers were receptive to HONEY. Approximately 70 percent of them reported that HONEY was nice to have or really needed by their students. There was a trend toward better use of HONEY in classes where teachers had had more intensive training. The average score on the 7-point use scale was 4.2 for the workshop group and only 3.1 for the notification group. This difference was not consistent across grade levels, however, and was not statistically significant. Utilization scores were highest in the six kindergarten classes whose teachers had participated in workshop and turnaround sessions and lowest in the three third grade notification classes. The difference between grade levels was statistically significant.

Learner outcomes were best in third grade classes. There were improvements in knowledge in all groups of children, but the greatest gains were made in third grade classes whose teachers had simply been notified HONEY was available. On the average, students scored 10 or 11 out of 20 on the pretest and 14 to 17 on the posttest. In the third grade notification classes, students averaged 11 on the pretest and 19 on the posttest of nutrition knowledge.

Across groups, students' attitudes were acceptably positive (the criterion was a score of at least 24 on the 33 point scale). There was no overall change in attitude scores: students averaged 27 out of 33 points on the pretest and 26 on the posttest. However, students in notification classes performed significantly better than those in other groups on the posttest of nutrition attitudes.

Despite the favorability of their attitudes and the significant change in their knowledge about food and nutrition, less than a third of the 365 children participating in this study selected "good" snack items in a food choices activity.

More detail about results of different methods for introducing new curriculum materials into public school classrooms can be found in the evaluation report entitled **Strategies for Promoting Use of Nutrition Education Materials** included as Appendix D to this report.

NET Program Participation Increased

Participation in the Texas NET Program averaged 70 percent of goals for 1987 with notable increases in numbers of children, public school teachers and food service personnel, and child care food service personnel reached in NET workshops.

	Public Schools				Private Schools				Child Care				Others		
	85	87	G	%	85	87	G	%	85	87	G	%			Average
WORKSHOPS															
Children	0	1624/100	=	100	0		-		0	226/100	=	100			100
Educators	64	767/200	=	100	271	126/100	=	100	1241	839/600	=	100			100
Food Service	5	508/100	=	100	233	111/100	=	100	264	997/600	=	100			100
Others													238	234	
LIBRARY															
Children	864	4450/660	=	100	365		-		1289	510/660	=	80			90
Educators	85	139/330	=	40	0	3/	=	100	102	56/330	=	20			50
Food Service	356	110/165	=	70	0	0/165	=	0	79	153/660	=	20			30
Others													755	77	
AVERAGE				85				75				40			70

85 = number of participants in 1985 87 = number of participants in 1987 G = goal for 1987

Program Participation during 1987

The number of persons reached with NET Program resources increased again in 1987. In 1985 there were 6,200 program participants, 9,700 in 1986, and 10,900 in 1987. Groups in which growth was most notable were children and food service personnel. Twice as many were reached in these groups in 1987 as in 1985. The number of children reached grew from 2,500 to 6,800 and the number of food service personnel participating in the program increased from 940 to 1,900. Relative participation by target groups was 45 percent from public and private schools and 55 percent for child care situations.

NET workshops were rousingly successful in achieving participation goals in all categories. Despite decreases in staffing (6 in 1985, 5.4 in 1986, and 4.5 in 1987), workshops accommodated more than twice as many participants in 1987 as in preceding years. Number of workshop participants grew from 2,300 in 1985 to 5,500 in 1987.

The 1800 children who participated in **Honey Bees Buzz for Good Nutrition** workshops accounted for approximately half the gain in workshop participation. This workshop was developed during 1987 especially for children.

The NET Program's lending library collection was slightly less successful in achieving its participation goals. Across groups, the library averaged 50 percent goal attainment. Areas where the library fell far short of its participation goals were in reaching food service personnel in private schools and both educators and food service personnel in child care situations.

Across activities, the program averaged 85 percent goal attainment in public schools, 75 percent in private schools, and 70 percent in child care. Across groups and activities, the average was 70 percent goal attainment.

More detail about number of persons reached with NET resources can be found in the evaluation report entitled **Participation in the NET Program** included as appendix E to this report.

CONCLUSIONS

The overall impact of the Texas NET Program was significantly positive during 1987.

* Perhaps because of improved coordination with other programs (e.g., CCFP and Texas Agricultural Extension Service), NET attracted increased participation in 1987.

* Program activities were effective in shaping positive attitudes and/or knowledge of substantial numbers of children, educators, and school and child care food service personnel.

CONCLUSIONS

The overall impact of the NET Program depends on two things: 1) the number of individuals from children's learning environments who participate and 2) the degree to which program activities are effective in promoting positive changes in knowledge, attitudes, and behaviors which have a bearing on children's nutritional status. During 1987, the Texas NET Program demonstrated success in both areas.

Participation was 50 percent greater than in the baseline year of 1985. Growth was noted in numbers of children and child care food service personnel reached in NET workshops. Some of this growth can be attributed to improvements in coordination between NET and related programs. The number of children reached through the NET library, for example, soared when members of the Texas Agricultural Extension Service began using the collection as a resource to support presentations they make to children in public schools. And the jump in number of food service personnel reached in NET workshops probably can be traced to the special series of workshops developed and conducted at the request of the Child Care Food Program.

The effectiveness of these and other NET activities became apparent when results were integrated across the five evaluation studies conducted during 1987. The majority of statistical and criterion referenced analyses of changes in nutrition knowledge, attitudes, and behavior were positive. None were negative.

Child nutrition related knowledge and attitudes of educators and food service personnel were significantly better after NET workshops than they were before. NET workshops helped shape favorable knowledge and attitudes toward the lending library collection. Teachers responded favorably to the introduction of new curriculum materials to support classroom nutrition education. When these teachers integrated nutrition learning activities into instruction for kindergarten and third grade students, the result was significant improvement in the children's knowledge about food and nutrition.

These results support the conclusion that the Texas NET Program had a significant positive impact during 1987. It effectively communicated child nutrition related information to substantial numbers of children, educators, and school and child care food service personnel.

Areas Where Improvements May Be Needed

As in years past, the Texas NET Program showed strength during 1987 in promoting change in child nutrition related knowledge and attitudes but had limited impact on participant behavior.

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* Workshops for child care food service pesonnel did not immediately improve menu planning and record keeping in CCFP.

* The total number of school and child care personnel who have become patrons of the NET lending library is very small relative to the 10,000+ potentiated by distribution of the media catalog and publicity in workshops and journal articles.

* Neither workshops nor turnaround sessions for teachers had strong facilitating effects on use of nutrition curriculum materials in kindergarten and third grade classrooms.

* Despite improvements in their nutrition knowledge, the vast majority of kindergarten and third grade students participating in this study failed to make nutritious snack food choices.

There still is room for improvement, however. As in years past, the Texas NET Program showed strength in promoting changes in knowledge and attitudes but had limited impact on participant behavior.

The **Advanced Menu Planning** workshops helped participants master concepts and skills needed to improve menu planning and record keeping in CCFP, but no immediate improvements were observed in Daily Menu Records. The most frequently occurring problems concerned quantities of food. In the majority of cases, amounts of food indicated on the Menu Records were insufficient to meet minimum requirements. This problem persisted after workshops at the same level of intensity as it had before.

The survey of NET library patrons in 1987 confirmed results of previous studies indicating that less than half of the library's users are staff of schools and child care facilities. Library patrons who are in these priority populations reported that the NET media catalog, NET workshops, and articles in child care journals are their principal sources of information about the library. Although the number of borrowers per month has increased from 6 in 1985 to 20 in 1987, the number of school and child care personnel who became library patrons during 1986 and 1987 is still only a small portion of the 10,000+ potentiated by distribution of the catalog and publicity in NET workshops and journal articles.

Another area where NET activities fell short of accomplishing significant change in participant behavior was in promoting use of the HONEY curriculum in public schools. Workshops often are identified as the preferred strategy for promoting nutrition education. But, because workshops are time intensive, Texas NET Program staff wanted to evaluate relative utility of alternative, less expensive procedures. Feedback from teachers at schools where HONEY was piloted indicated favorable response to the idea of sending a lead teacher to a workshop and then having that teacher share information about the new materials during team meetings with other teachers at the school. In the research literature this procedure is referred to as "turnaround". Evaluation of these alternatives indicated, however, that neither workshops nor turnaround had strong facilitating effects on use of nutrition curriculum materials in kindergarten and third grade classrooms.

Finally, it was surprising to find that, although nutrition instruction improved children's nutrition knowledge, it had little or no influence on their choice of snack foods. After 10 weeks of instruction that included nutrition learning experiences, more than two-thirds of the 300 kindergarten and third grade students participating in this study selected soda pop, puff chips, or presweetened cereal rather than fruit juice, cheese-and-celery, or raisin-nut-mix.

RECOMMENDATIONS

In addition to demonstrating that federal funds are being spent effectively and documenting need for continued support of the NET Program, results of this evaluation suggest strategic directions for program revisions and planning.

* Continue to emphasize improved coordination with related programs, giving special attention to CCFP.

  - Work with CCFP to 1) identify library resources to help child care personnel improve their capabilities for meeting USDA nutrition and food service requirements, and 2) select additional content and appropriate instructional sequence for NET workshops.

  - Facilitate increased networking and development of a council to help coordinate nutrition education programs at the state level.

RECOMMENDATIONS

Because the NET Program is under continuing resolution with the Congress, the program in Texas must be administered in ways that enable it to meet rising demand for service at a constant level of funding. Results of evaluation studies conducted during 1987 suggest two directions for program planning that can help improve program performance without putting additional strain on available resources: 1) Continue to emphasize improved coordination with related programs; and 2) Investigate alternatives for amplifying effects on participant behavior.

Focusing on improved coordination promises to increase efficiency and effectiveness of NET activities. Results of two of the evaluations conducted during 1987 indicate that child care and school personnel already are using nutrition education materials available through related programs such as the Dairy Council and the American Heart Association. It will be efficient, therefore, to coordinate efforts with these programs to promote expanded use of materials with which teachers are familiar rather than to expend resources developing and promoting new materials such as HONEY.

The NET Program already has benefited from its efforts to improve coordination. Some of the increase in participation in its priority populations during 1987 can be traced to its interactions with CCFP and the Extension Service. Improved coordination also promises to amplify NET effects on participant behavior. If the information participants receive through the NET Program is consistent with and reinforced by their experience with related programs, there is a better chance their behaviors will change in ways that lead to improved nutritional status for the children of Texas.

Alternatives for improved coordination include:

1) Working with CCFP to a) identify library resources to help child care personnel improve their capabilities for meeting USDA nutrition and food service requirements, and b) develop additional content and instructional sequence for NET workshops. The need for giving special attention to CCFP is indicated by results of three of the studies conducted during 1987. Only 4 of the 93 patrons who responded to the library survey were food service personnel or CCFP sponsors. Workshop evaluations complemented results of other studies showing that, before training, child care personnel have positive attitudes but lack knowledge about child nutrition. Analysis of Daily Menu Records indicated need for additional training and support to ensure that meals served in child care facilities meet children's nutritional needs; and

2) Facilitating increased networking and development of a council to help coordinate nutrition education programs at the state level. The directory of nutrition education programs compiled and distributed by the Texas NET Program in 1986 lays the foundation for this effort.

By continuing to improve coordination with related programs and evaluating alternatives for amplifying effects on participant behavior, the Texas NET program can increase its contribution to health and well-being of the children of Texas.

* Participate in and support research on means for amplifying NET effects on behavior.

  - Share information about progress and problems in the NET Program with program participants, staff of related programs, and members of the nutrition education research community.

  - Continue to work with students and faculty of Texas universities and colleges to conduct evaluation and needs assessment studies that help explain what works and what doesn't.

The need for research on factors that influence behavioral change is clearly indicated when results of studies conducted during 1987 are combined with those of NET Program evaluations from previous years. Of seven statistically evaluated studies of behavioral effects of the Texas NET Program since 1984, only three have been significantly positive. In only two of these seven behavioral outcome studies did participant behavior match or exceed criteria set by NET Program staff as minimum standards for acceptable program performance.

These failures to influence behavior occurred despite the program's consistent success in facilitating knowledge and attitude change. Across the years, there have been 16 statistical evaluations of knowledge and attitude outcomes of the Texas NET Program. All but two were significantly positive, and even in those two studies outcomes matched or exceeded criteria for acceptable performance.

In order for the NET Program to increase its contribution to health and well-being of children in Texas, expanded models of the nutrition education process need to be developed. NET Program staff, therefore, should participate in and support research of factors and processes that influence participant behavior. Possibilities include:

1) Sharing information with program participants, staff of related programs, and members of the nutrition education research community. Feedback about correct performance is a strong reinforcer of human behavior. Program participants need to know how much they've learned and what effect it will have on children's health and well-being. Alternatives for providing them with this kind of information need to be investigated. NET Programs in other states, other agencies engaged in nutrition education in Texas, and the nutrition education research community also should be kept informed about problems and progress of the Texas NET Program. Publishing articles in professional journals and making presentations at conferences is one way to insure that information about success and about research needs has high visibility and attracts attention of those with resources to help solve the problems; and

2) Continuing to work with students and faculty of Texas universities and colleges to conduct evaluation and needs assessment studies. Each year, at least one of the evaluation studies has been supported by volunteers from local universities. This interaction between academic and applied settings keeps staff of the Texas NET Program on the leading edge of developments in education and nutrition and keeps the research community in touch with program needs.

By continuing to improve coordination with related programs and evaluating alternatives for amplifying effects on participant behavior, the Texas NET Program can increase its contribution to health and well-being of the children of Texas.

Appendix A

EVALUATION REPORT

Performance of Nutrition Education and Training Program Workshops: November 1986 through May 1987

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Abstract

Tests and questionnaires were administered before and after **Sanitation and Health** and **Advanced Menu Planning** workshops conducted for Child Care Food Program (CCFP) sponsors and providers. Results showed high levels of satisfaction with the workshops and significant improvements in child nutrition related knowledge and attitudes. These findings help validate need for these two workshops and demonstrate that single, brief workshops can be relied on to teach CCFP participants concepts and skills to improve food service for children.

EXECUTIVE SUMMARY

THE SERIES OF NUTRITION EDUCATION AND TRAINING (NET) PROGRAM WORKSHOPS CONDUCTED IN RESPONSE TO COMMON PROBLEMS DETECTED IN THE CHILD CARE FOOD PROGRAM (CCFP) EFFECTIVELY COMMUNICATED CHILD-NUTRITION-RELATED INFORMATION TO SUBSTANTIAL NUMBERS OF CCFP CONTRACTORS AND PROVIDERS.

			Percent Exceeding Criterion			
	Number of CCFP Participants		Knowledge		Attitudes	
Workshop	Educators	Food Service	Before	After	Before	After
SANITATION AND HEALTH	110	150	46	72	40	90
ADVANCED MENU PLANNING	170	180	53	89	48	75

EXECUTIVE SUMMARY

As part of the Texas Department of Human Services's efforts to amplify synergistic effects of the instructional and reimbursement elements of the Child Nutrition Programs (CNP) it administers, results of administrative reviews of the Child Care Food Program (CCFP) were used to identify Nutrition Education and Training (NET) Program workshop topics to be offered in a special series during 1987.

This study was conducted to determine how well the two workshops in the series performed in improving CCFP participants' child-nutrition-related knowledge and attitudes. **Sanitation and Health** workshops were conducted in November 1986 and January 1987 to teach food storage and sanitation concepts and skills. **Advanced Menu Planning** workshops were developed to cover topics related to menu records and meal pattern requirements. These workshops were offered for the first time March through May 1987. Average attendance was 25 per workshop session. Total attendance in these workshops included 260 to 350 CCFP contractors and providers.

Evaluation Procedures. Tests and questionnaires administered before and after workshops provided data on participants' mastery of knowledge and attitude learning objectives. An evaluation form administered at the close of the workshop measured participants' satisfaction with training they received during the workshop. Changes in knowledge and attitudes were evaluated using repeated measures analysis of variance. Criterion references also were used to evaluate participants' learning and satisfaction.

Results. Participants indicated high levels of satisfaction with the workshops and showed significant improvement in knowledge test and attitude scale scores. More that 70 percent of the participants reached or exceeded the criterion for acceptable performance on the tests and scales administered after the workshops whereas only 40 to 50 percent had done so before. Performance was uniformly strong on posttests. There were only one or two items on any of the tests or scales which fell short of acceptable outcomes.

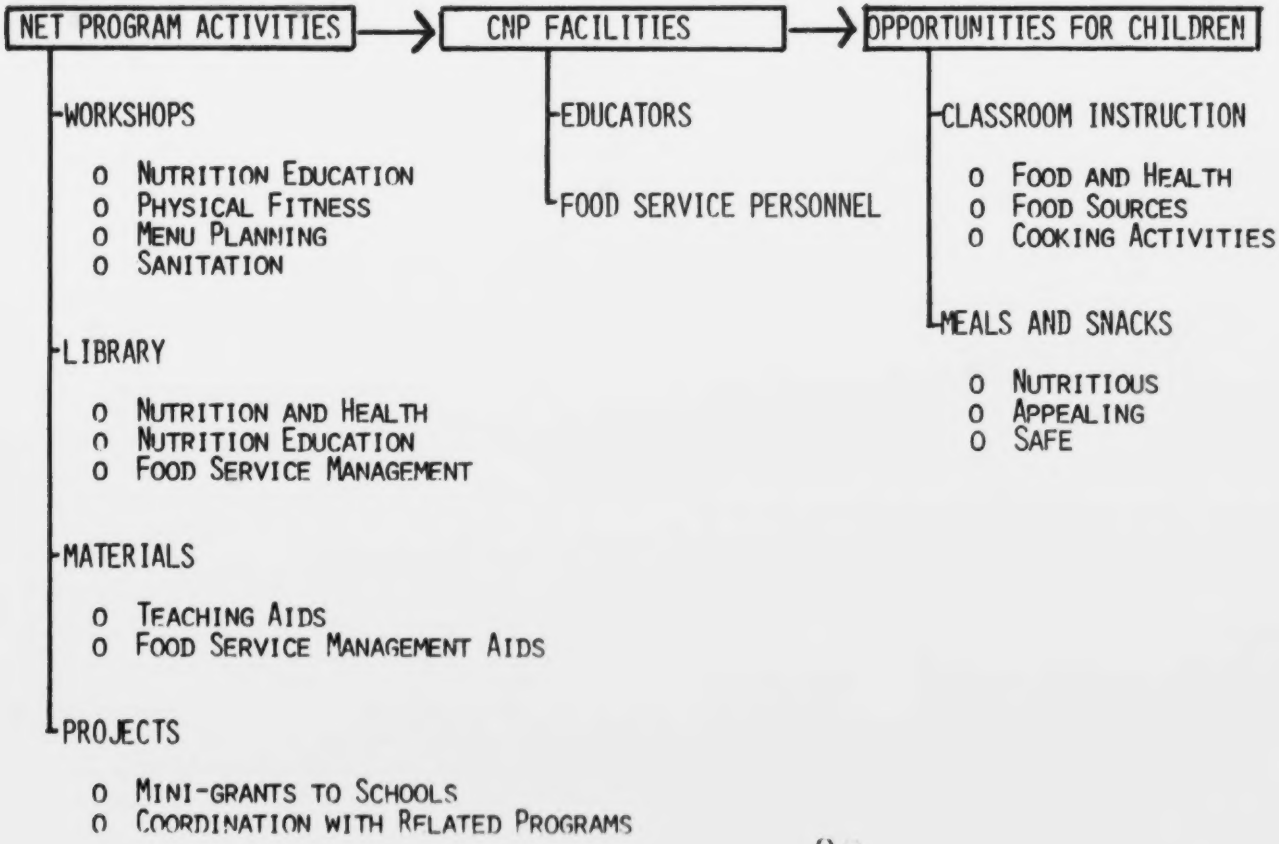
Conclusions and Recommendations. The workshops helped CCFP participants learn child nutrition-related concepts, skills, and values. It can be concluded that, because of their participation in NET workshops, personnel in CCFP facilities are better prepared to manage food service operations so children are sure to be served meals and supplements that are safe and nutritious.

The magnitude and statistical reliability of changes in knowledge and attitude scale data help a) validate need for these two workshops and b) demonstrate that single, brief workshops can be relied on to teach CCFP participants things they need to know to improve food service for children.

Feedback to trainers and routine monitoring of workshop performance were identified as strategies to ensure workshops continue to be effective in meeting CNP nutrition education and training needs.

BACKGROUND

CONDUCTING NUTRITION EDUCATION AND FOOD SERVICE WORKSHOPS FOR PARTICIPANTS IN THE U.S. DEPARTMENT OF AGRICULTURE'S CHILD NUTRITION PROGRAMS IS A MAJOR ACTIVITY OF THE TEXAS NUTRITION EDUCATION AND TRAINING (NET) PROGRAM.



BACKGROUND

Conducting nutrition education and food service workshops for participants in the U.S. Department of Agriculture's (USDA) Child Nutrition Programs is a major activity of the Texas Nutrition Education and Training (NET) Program. By providing child nutrition-related training for teachers and food service personnel, NET workshops help ensure that children have opportunities to learn about and to practice good eating habits in schools and child care facilities. The expected result is changes in children's nutrition knowledge, attitudes, and behavior such that their nutritional status is improved and food waste in the Child Nutrition Programs is minimized.

As part of the Texas Department of Human Services' efforts to amplify synergistic effects of the instructional and reimbursement elements of the Child Nutrition Programs it administers, results of administrative reviews of the Child Care Food Program (CCFP) were used to identify NET workshop topics to be offered in a special-invitation series during 1987. Compilation of data from administrative reviews showed the majority of CCFP contractors were having difficulty complying with requirements regarding a) menu records and meal pattern requirements, and b) food storage and sanitation.

Because learning objectives in the NET workshop entitled **Sanitation and Health** directly address CNP food storage and sanitation requirements, letters encouraging attendance in this workshop were sent to all of TDHS's CNP contractors in the first quarter of fiscal year 1987. Seven **Sanitation and Health** workshops were conducted in November and seven in January. Five additional sessions were scheduled for the summer of 1987 to accommodate the overflow in advance registration for this workshop. A new workshop was developed to cover topics related to menu records and meal pattern requirements. This workshop, entitled **Advanced Menu Planning**, was offered for the first time in March, 1987. Invitations were sent to all CCFP contractors in February. Three workshops were conducted in March, fourteen in April, and four in May. **Advanced Menu Planning** workshops for National School Lunch (NSLP) contractors were scheduled for the summer of 1987.

NET workshops are free of charge. They are conducted by registered dietitians in the participants' own communities. In addition to being a principal component of technical assistance provided by TDHS for CNP contractors, NET workshop training meets TDHS continuing education requirements for staff of licensed day care centers. **Sanitation and Health** and **Advanced Menu Planning** provide 4.5 and 7.5 hours of training, respectively.

Exercises at the close of each section of the workshop curriculum provide feedback to participants about their mastery of specific learning objectives. Many of the exercises involve group problem-solving. Frequent use is made of audio-visual aids. These features of the instructional process help to keep participants comfortable and motivated to master the learning objectives.

PURPOSE

THIS STUDY WAS CONDUCTED TO DETERMINE HOW WELL THE SANITATION AND HEALTH AND ADVANCED MENU PLANNING WORKSHOPS PERFORMED IN HELPING CNP PARTICIPANTS MASTER CHILD-NUTRITION-RELATED KNOWLEDGE AND ATTITUDE LEARNING OBJECTIVES.

* WERE PARTICIPANTS SATISFIED WITH THE WORKSHOP?

* DID PARTICIPANTS KNOW MORE ABOUT CHILD-NUTRITION-RELATED TOPICS AFTER THE WORKSHOPS THAN THEY DID BEFORE?

* DID PARTICIPANTS HAVE MORE POSITIVE ATTITUDES ABOUT FOOD SERVICE MANAGEMENT FOR CHILDREN AFTER THE WORKSHOPS THAN THEY DID BEFORE?

* WHAT WERE RELATIVE STRENGTHS AND WEAKNESSES OF WORKSHOP PERFORMANCE?

PURPOSE

This study was conducted to determine how well the **Sanitation and Health** and **Advanced Menu Planning** workshops performed in helping CCFP participants master child-nutrition-related knowledge and attitude learning objectives.

The **Sanitation and Health** workshop is considered a success if, after the workshop, participants:

* know more about the reasons for following proper food handling and sanitation practices;

* know proper procedures for food preparation, food service, and sanitation, and

* show a stronger desire to maintain the highest level of cleanliness in all food service operations.

The **Advanced Menu Planning** workshop is considered a success if, after the workshop, participants are better prepared to:

* plan menus which meet CNP meal pattern requirements;

* use the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS in planning menus and purchasing foods; and

* complete daily menu records correctly.

Data describing changes in participants' knowledge and attitudes related to these concepts are needed for three reasons. First, information about the extent to which the workshops are successful in communicating child-nutrition-related concepts to members of the NET Program's target population are needed to help document program effectiveness. In addition to being useful in accounting to the public for the way federal funds are spent, program effectiveness data are needed to support requests to USDA for continued funding of the Texas NET Program.

The second reason workshop performance data are needed is to help identify areas where changes can be made to improve the curricula. By identifying areas where participants have already achieved mastery before the workshop and identifying areas where mastery is not achieved even after the workshop, this study provides information workshop trainers can use in making decisions about how to allocate learning time during the workshop. For the curriculum developer, this study provided information to aid in making decisions about how the curricula can be revised and updated to make them as effective as possible.

Finally, data about performance of these two workshops are required to help make decisions about content and format of training still needed to support CNP administered through the Texas Department of Human Services.

PROCEDURES

TESTS AND QUESTIONNAIRES ADMINISTERED BEFORE AND AFTER WORKSHOPS PROVIDED DATA ON PARTICIPANTS' MASTERY OF KNOWLEDGE AND ATTITUDE LEARNING OBJECTIVES. AN EVALUATION FORM ADMINISTERED AT THE CLOSE OF THE WORKSHOP MEASURED PARTICIPANTS' SATISFACTION WITH THE WORKSHOP.

WORKSHOPS	NUMBER	PARTICIPANTS	COMPLETE DATA SETS		
			KNOWLEDGE	ATTITUDES	SATISFACTION
SANITATION AND HEALTH	14	350	25	72	259
ADVANCED MENU PLANNING	23	430	45	56	378

PROCEDURES

Tests and questionnaires administered before and after workshops provided data on participants' mastery of knowledge and attitude learning objectives. An evaluation form administered at the close of the workshop measured participants' satisfaction with the workshop. In nutrition education programs, outcomes generally are measured in terms of changes in participants' nutrition knowledge, attitudes, and behaviors. Comprehensive models for instructional system design and evaluation, however, also emphasize the importance of participant satisfaction. This study, therefore, included measures of knowledge, attitudes, and satisfaction.

Test and questionnaire items were adapted from standardized nutrition knowledge and attitude tests supplemented with items written by Texas NET Program staff. The reading level for these data collection instruments was evaluated using Fry's method. Items and instructions were adjusted as necessary to assure the instruments required no higher than ninth grade reading level.

Workshop trainers administered the pre- and post-tests of knowledge at the beginning and close of the workshop. The follow-up test and attitude questionnaire were mailed to independent samples of workshop participants approximately two months after the close of the workshop. Samples of 75 to 100 participants per workshop (depending on attendance figures) were selected according to the last digit in their Social Security Number (SSN). Knowledge tests were mailed to those whose last digit was odd and attitude questionnaires were mailed to those whose last digit was even.

Of approximately 350 participants in **Sanitation and Health** workshops, 260 were from CCFP facilities (110 educators, 140 food service personnel; 15 day home providers/sponsors) and 70 were from private schools and residential facilities participating in the School Lunch or Breakfast Programs (10 educators and 60 food service personnel). Approximately 75 percent of the participants completed workshop evaluation forms used to measure satisfaction with the workshop. Seventy-two child-nutrition-related attitude questionnaires and 72 follow-up tests were returned (a return rate of 40 percent). Twenty-five of the follow-up tests could be matched to pre-/post-test records.

There were 430 participants in the **Advanced Menu Planning** workshops: 350 from CCFP facilities (170 teachers, 150 food service personnel, and 30 day home providers/sponsors) and 80 other individuals. More than 85 percent completed workshop satisfaction evaluation forms. Follow-up tests/questionnaires were mailed to approximately 300. Fifty-six attitude questionnaires and 55 follow-up tests were returned (return rate of 35 percent). Forty-five of the follow-up tests could be matched to pre-/post-test records.

MEASURING SATISFACTION

STANDARDIZED QUESTIONNAIRES DEVELOPED BY TDHS'S STAFF DEVELOPMENT DIVISION WERE USED TO MEASURE PARTICIPANTS' SATISFACTION WITH THE WORKSHOPS.

Texas Department of Human Resources

STAFF DEVELOPMENT AND TRAINING REPORT
SESSION INFORMATION

TEXAS DEPT OF Human Resources

RECEIVED
NOV 19 1986
of SERVICES DIVISION

[redacted]

INSTRUCTIONS: For each item listed below, please CIRCLE the most appropriate number to reflect your evaluation.

ITEM	EVALUATION 1 Not At All	2 Somewhat	3 Well	4 Very Well	COMMENTS
1. Objectives were communicated:	1	2	3	(4)	[redacted]
2. Instructor's presentation and manner helped you to meet the objectives:	1	2	3	(4)	
3. Instructor provided opportunity for discussion, comments, and questions:	1	2	3	(4)	
4. Course content helped you to meet the objectives:	1	2	3	(4)	
5. Handouts, audio-visuals, etc., helped you to meet the learning objectives:	1	2	3	(4)	

6. What part(s) of the session will be most helpful to you in doing your job?

7. What part(s) of the session will be least helpful to you in doing your job?

8. What suggestions do you have for improving this session?

BEST COPY AVAILABLE

Measuring Satisfaction

Standardized questionnaires developed by TDHS's Staff Development Division were used to measure participants' satisfaction with the workshop. Administered by the trainers at the close of each workshop, the questionnaire asked respondents to evaluate the workshop on five dimensions. They are asked whether or not:

* objectives were communicated,

* instructor's presentation and manner helped meet the objectives,

* instructor provided opportunity for discussion, comments, and questions,

* course content helped meet the objectives, and

* handouts, audio-visuals, etc., helped meet the learning objectives.

Each item is scaled from 1="not at all" to 4="very well". The criterion for acceptable levels of satisfaction was set at 3.0. Ideal levels would be 3.5 to 4.0 on the 4-point scale.

MEASURING AND ANALYZING CHANGES IN KNOWLEDGE

TEST ITEMS SAMPLED FACTUAL AND OPERATIONAL KNOWLEDGE NEEDED TO MASTER WORKSHOP OBJECTIVES.

ADVANCED MENU PLANNING

Office Use Only
Version: 1 2 (3)
Type: 1 2 (3)

Directions: CIRCLE the number that goes with the one best answer for each item.

1. **The sections of the Food Buying Guide for Child Nutrition Programs are:**

   1 meat/meat alternate
   vegetables & fruits
   bread/bread alternates
   milk
   other foods

   2 kitchen math
   nutrition labeling
   bargain hunting
   kitchen safety

   3 food service management
   equivalent units charts
   kitchen math

   4 food & health
   children's food preferences
   standardized recipes

   5 fractions
   decimals
   purchase units
   food groups
   equivalent measures

2. **One of the main sources of vitamin C is:**

   1 liver
   2 citrus fruit
   3 dried peas
   4 milk
   5 all of the above are main sources of vita

3. **The best sources of vitamin A are:**

   1 meat, potatoes, and breads
   2 spinach, sweet potatoes, broccoli, and apr
   3 lettuce and corn
   4 low-fat milk, yogurt, and cottage cheese
   5 none of the above are good sources of vit

4. **The first ingredient listed on a food [illegible]**

   1 has the highest nutrient value
   2 is the best source or iron
   3 has the most calories
   4 is the predominant ingredient by weight
   5 has no signif ant value

17. **Which of the following foods are richest in iron?**

   1 an apple and milk
   2 potato chips and soda pop
   3 punch and chocolate chip cookies
   4 peanut butter on raisin bread
   5 an orange and milk

18. **Using the following information, calculate the amount of ground beef needed to serve 50 one-ounce portions.**

1. Food as purchased	2. Purchase unit	3. Servings per purchase unit	4. Serving size or portion and contribution to meal requirement	5. Purchase units for 100 servings	6. Additional yield information
Ground Beef (Market Style** no more than 30 percent fat)	Pound	11.20	1 ounce cooked lean meat	8.93	1 pound AP = 0.70 pound cooked meat

   1 3.75 pounds
   2 11.20 pounds
   3 4.46 pounds
   4 56 pounds
   5 8.75 pounds

Measuring and Analyzing Changes in Knowledge

Test items sampled factual and operational knowledge needed to master workshop objectives. One of the items on the test administered in the **Advanced Menu Planning** workshop, for example, asked participants to name the sections of the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS. Another required them to calculate the amount of ground beef needed to serve 50 one-ounce portions.

Each test item had five response alternatives in a forced-choice format. Participants were instructed to select the one best response alternative for each item.

To assure that the tests were representative of workshop content, their validity was checked by matching test items to the specifications table for each workshop curriculum. Test reliability was checked using SPSS-X procedures for computing coefficient alpha (Kuder-Richardson formula 20). Assessed reliability was .82 (n=273) for the **Sanitation and Health** test and .83 (n=318) for the **Advanced Menu Planning** test. For most applied research or program evaluation applications, reliability coefficients of .70 or higher are considered quite good.

Three versions of the test were developed for each workshop so that pre-, post-, and follow-up-tests would not be identical with one another. The same items were used on all three tests to assure comparability of performance before, during, and after the workshop. The item sequence was varied, however, to reduce the effects of test-specific memory. The version used as pre-, post-, and follow-up-test was counterbalanced across workshops conducted on different dates.

Scores on tests administered before, at the close (i.e., during), and after the workshop were compared to determine what effect the curricula had on mastery of knowledge objectives. Criterion references were preset such that 70 percent correct was considered acceptable and 95 percent correct signified mastery. Statistical significance of observed differences was evaluated using SPSS-X procedures for repeated measures analysis of variance. When scores were found to be reliably higher after the workshop than before, it was concluded the curriculum facilitated learning and promoted changes in knowledge.

In order to diagnose relative strengths and weaknesses of the curriculum, performance on specific test items was inspected. Goals were set for the items and actual performance compared against the goal. For knowledge tests, the goal was 70 percent correct. If 70 percent of the participants responded correctly, it was concluded that mastery was well represented in the population of workshop participants. This criterion was used to identify content areas in which mastery existed before the workshop, to identify areas in which mastery was facilitated by the workshop curriculum, and to diagnose areas where the curriculum needs improvement.

MEASURING AND ANALYZING ATTITUDE CHANGE

QUESTIONNAIRE ITEMS WERE WRITTEN BY MEMBERS OF THE NET PROGRAM STAFF TO MEASURE ATTITUDES TOWARD FOOD SERVICE MANAGEMENT CONCEPTS AND PRACTICES.

Section II. CIRCLE the number that shows how you felt BEFORE you attended the Advanced Menu Planning workshop.

ADVANCED MENU PLANNING

Section I: Please CIRCLE the number that best shows how you feel about each of the following statements.

		Strongly Disagree	Disagree	Unsure	Agree	Agree Strongly
1.	Menus should be planned to provide good sources of iron and vitamin C every day . . .	1	2	3	4	5
2.	Serving many different foods with a variety of textures and colors encourages children to eat well . . .	1	2	3	4	5
3.	It is important for providers to know how to calculate math problems involving fractions and decimals . . .	1	2	3	4	5
4.	The FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS is a very helpful guide for menu planning and food purchasing . . .	1	2	3	4	5
5.	Providers should read the ingredients label on a package of processed food before buying it . . .	1	2	3	4	5
6.	Calculating the amount of food needed for each menu item saves money . . .	1	2	3	4	5
7.	The ingredients list on nutrition labels helps the provider decide if a food is allowable or nonallowable for program requirements . . .	1	2	3	4	5
8.	The FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS is too difficult for most providers to use . . .	1	2	3	4	5
9.	Providers should encourage children to try new foods . . .	1	2	3	4	5
10.	Providers should only serve foods they know the children will eat . . .	1	2	3	4	5
11.	It is important for providers to complete Form 1530 correctly and completely . . .	1	2	3	4	5
12.	The NET Leading Library Collection is a very useful resource for information about menu planning and food service . . .	1	2	3	4	5

Measuring and Analyzing Attitude Change

Questionnaire items were written by members of the NET Program staff to measure attitudes toward meal pattern requirements, Daily Menu Records, and menu planning practices. One of the items on the questionnaire for the **Advanced Menu Planning** workshop, for example, asked participants whether they agreed it is important for providers to complete Form 1530 correctly and completely. Another asked whether they believed serving many different foods with a variety of textures and colors encourages children to eat well.

Items on the questionnaires formed a Likert-type scale. The response alternatives for each item ran from "strongly agree" to "strongly disagree". Actual responses were scaled from 1="strong negative" to 5="strong positive."

Respondents were asked to report their current attitudes and then indicate what their attitudes were before the workshop. This data collection procedure is referred to as a retrospective pretest or then-posttest. It has two advantages for this study. First, it captured data about attitudes before and after the workshop without taking up valuable workshop time. Second, it assured that participants had the same frame of reference for reporting their attitudes before and after the workshop.

Content validity of the data collection instruments was assessed by checking items against the table of specifications for the workshop curriculum. Scale reliability was checked using SPSS-X procedures for calculating the Spearman-Brown split-half coefficient. Assessed reliability was .79 (n=72) for the **Sanitation and Health** questionnaire and .76 (n=56) for the **Advanced Menu Planning** scale. These figures were gratifying given that measurement of nutrition attitudes often is problematic.

Average attitude scale values reported for times before and after the workshop were compared to determine how well the curriculum performed in shaping positive attitudes toward food service management concepts and practices. Criterion references were preset such that 4.0 represented acceptable levels of favorability and 4.5 represented mastery of attitude learning objectives. Statistical significance of changes in attitude scores was evaluated using SPSS-X procedures for repeated measures analysis of variance.

Responses to specific questionnaire items were compared against the goal of 70 percent positive responses. If 70 percent of workshop participants gave positive or strong positive responses, it was concluded that the specific value or belief was well represented in the population of workshop participants. This criterion was used to analyze relative strengths and weaknesses of the workshop curriculum.

RESULTS

PARTICIPANTS INDICATED HIGH LEVELS OF SATISFACTION WITH THE WORKSHOPS AND SHOWED SIGNIFICANT IMPROVEMENT IN KNOWLEDGE TEST AND ATTITUDE SCALE SCORES.

		Outcomes		
Workshop	CCFP Participants	Satisfaction	Knowledge	Attitudes
SANITATION AND HEALTH	260	HIGH	+ *	+ + *
ADVANCED MENU PLANNING	350	HIGH	+ + *	+ *

+ = ACCEPTABLE PERFORMANCE + + = MASTERY * = SIGNIFICANT IMPROVEMENT

RESULTS

Participants indicated high levels of satisfaction with the workshops and showed significant improvement in knowledge test and attitude scale scores.

On the workshop evaluation form administered at the close of the workshops, average scores were above the criterion value of 3.5 on the 4-point participant satisfaction scale.

Changes in knowledge and attitudes from before to after the workshops were not only statistically significant but brought scores above preset criteria for acceptable and mastery level performance. After the **Sanitation and Health** workshop, average knowledge test performance was above the 70 percent correct set as criterion for acceptable performance. Average scores on the attitude scale were above 4.5, reflecting mastery of attitude learning objectives and hence evidence of strong desire to maintain the highest level of cleanliness in all food service operations.

The pattern was reversed for the **Advanced Menu Planning** workshop. The average score on follow-up test of child-nutrition-related knowledge was above 90 percent correct, indicating mastery of concepts and skills needed to plan menus to meet meal pattern requirements and correctly complete daily menu records. Attitude scores were above 4.0 but less than 4.5, indicating attitudes about menu-planning and food purchasing practices discussed in the workshop were positive but not strongly positive.

EFFECTS OF THE SANITATION AND HEALTH WORKSHOP

PARTICIPANTS GAVE THE WORKSHOP HIGH RATINGS AND SHOWED IMPROVEMENTS IN PERFORMANCE ON TESTS OF KNOWLEDGE AND ATTITUDES ABOUT NUTRITION-RELATED SANITATION AND HEALTH ISSUES.

SCALE	AVERAGE SCORE BEFORE	DURING	AFTER	CRITERION
SATISFACTION		3.7		3.5
KNOWLEDGE	62	80	87	70
ATTITUDES	4.2		4.6	4.0

EFFECTS OF SANITATION AND HEALTH WORKSHOP

Participants gave the workshop high ratings and showed improvements in performance on tests of knowledge and attitudes about nutrition-related sanitation and health issues:

* The average rating was 3.7 (sd=.5), indicating participants were very well satisfied with the workshop.

* At the close of the workshop, more than 70 percent of the participants reached or exceeded the criterion for acceptable performance on the knowledge test (70 percent correct response). At the beginning of the workshop less than half (46 percent) scored at or above the criterion. Average percent correct before, during, and after the workshop were 62, 80, and 87 (raw score averages of 8.7, 12.7, and 13.9 with standard deviations of 3.9, 2.8, and 2.4). This improvement in knowledge test performance was substantial and statistically significant, $F(2,48)=24.08$, $p<.001$.

* More than 90 percent scored above the criterion value of 4.0 on the 5-point attitudes scale after the workshop, and 25 percent gave strong positive responses to all 12 items on the attitudes questionnaire. Before the workshop, only about 40 percent earned scores as high as 4.0 with 10 percent giving strong positive responses to all 12 items. Average scores were 4.2 and 4.6 before and after the workshop. This improvement was substantial and statistically significant, $F(1,70)=49.63$, $p<.001$.

There were no differences in knowledge test scores for the 25 individuals whose pre-, post-, and follow-up-test records could be matched and those for the 320 individuals whose pre- and/or post-test data were available. It was concluded the sample was representative of the entire population of participants in the Sanitation and Health workshops.

When test performance in workshops with high and low Hispanic participation was compared, results suggested that, rather than putting Hispanic participants at a disadvantage, the curriculum may have been more effective in predominantly Hispanic workshops. Workshops in which more than 50 percent of participants were Hispanic showed lower pretest but higher posttest scores than was observed in workshops with less than 20 percent Hispanic participation. Average pretest scores were 8.2 and 9.5 for high and low Hispanic groups, respectively (standard deviations of 3.8 and 3.9). Average posttest scores were 13.1 and 12.4 (standard deviations of 2.3 and 3.1). These differences were statistically significant, $t(262)=2.46$, $p<.05$ and $t(172)=1.98$, $p<.05$.

SATISFACTION

MORE THAN 95 PERCENT OF PARTICIPANTS IN THE SANITATION AND HEALTH WORKSHOP GAVE IT HIGH MARKS ON EVERY DIMENSION MEASURED.

DIMENSION RATED	PERCENT RESPONDING* "VERY WELL"	"WELL"	AVERAGE SCORE
COMMUNICATION OF OBJECTIVES	76	22	3.7
TRAINER'S PRESENTATION & MANNER	76	22	3.7
OPPORTUNITIES FOR DISCUSSION	75	21	3.7
COURSE CONTENT	71	27	3.7
HANDOUTS & VISUAL AIDS	66	28	3.6

Satisfaction

More than 95 percent of participants in the **Sanitation and Health** workshop gave it high marks on every dimension measured. The workshop earned scores of 3.6 or 3.7 for communication of objectives, trainer's presentation and manner, opportunities for discussion, course content, and handouts and visual aids.

KNOWLEDGE

A QUESTION INQUIRING ABOUT EFFECT OF REFRIGERATION ON BACTERIAL GROWTH WAS THE ONLY ONE THAT PARTICIPANTS HAD DIFFICULTY ANSWERING AFTER THE SANITATION AND HEALTH WORKSHOP.

PERCENT OF PARTICIPANTS GIVING CORRECT ANSWERS TO QUESTIONS ON THE KNOWLEDGE TEST

	BEFORE	DURING	AFTER		BEFORE	DURING	AFTER
(2) SOURCE OF BACTERIA	88	92	92	(1) PERSONAL HYGIENE	92	96	100
(3) COMMON BACTERIA	60	80	96	(6) KEEPING FOOD SAFE	96	88	96
(4) REFRIGERATION	40	44	56	(7) FOOD SAFETY PRACTICES	80	88	96
(5) BACTERIA GROWTH	48	72	80	(9) TYPES OF DETERGENT	32	72	76
(8) BACTERIA/TOXIN	52	76	84	(10) SANITIZERS	36	78	83
(12) COMMON PESTS	84	92	100	(11) WASTE CONTAINERS	44	76	84
(16) NET LIBRARY PROCEDURES	71	83	90	(13) STORING CHEMICALS	80	80	96
				(14) PURCHASING PASTUERIZED	24	84	88
				(15) CLEANING CAN OPENER	68	76	76

Knowledge

A question inquiring about effect of refrigeration on bacterial growth (item 4) was the only one that participants had difficulty answering after the **Sanitation and Health** workshop. Before the workshop, 44 percent of the participants thought refrigeration kills mold and bacteria. After the workshop, 42 percent still held this mistaken idea.

At the beginning of the workshop, acceptable performance was already achieved on 7 of the 16 items on the knowledge test. The majority of workshop participants already knew insects, rodents, and people can put bacteria in food (item 2); fly, roach, and ant are common pests in food service facilities (item 12); food service personnel should practice personal hygiene (item 1); food safety is a key issue in receiving, storing, preparing, and serving food (item 6); keeping hot foods hot, clean and covered prevents bacteria from contaminating food (item 7); and poisonous and toxic materials should be stored outside the food preparation area (item 13). More than 70 percent of the workshop participants also knew before the workshop how to use the NET lending library collection (item 16).

Acceptable performance was attained for all other items by the close of the workshop. The curriculum helped participants learn salmonella, staphylococcus, and clostridium perfringens can cause food poisoning and illness (item 3); food, temperature, moisture, and time are essential elements for promoting growth of bacteria (item 5); acid, neutral, and alkaline are types of detergent (item 9); germicidals and sanitizers must be registered with the U.S. Department of Agriculture (item 10); containers for rubbish or garbage should be leakproof and nonabsorbent with a tight fitting lid (item 11); dehydrated eggs should be pasteurized before they are purchased (item 14); and after a can opener is used, it should be cleaned immediately (item 15).

For 14 of the 16 items on the test, performance was better at the follow-up than at the close of the workshop. Performance on the other two items (items 2 and 15) was the same at both posttest administrations.

ATTITUDES

After the Sanitation and Health workshop, participants gave positive or strong positive responses to every item on the attitude scale.

Average Scale Value of Responses* to Items on the Attitude Scale

	Before	After		Before	After
(4) Should know about bacteria	3.6	4.5	(1) Keeping hot food hot	4.5	4.8
(6) Protects reputation	4.5	4.8	(2) Controlling pests	4.7	5.0
(7) Important responsibility	4.5	4.9	(3) Not wearing nail polish	4.1	4.7
(10) People are bacteria source	4.0	4.3	(8) Sanitizing dishes	3.8	4.4
(5) NET library is useful	4.0	4.4	(9) Washing hands	4.5	4.9
			(11) Storing chemicals	4.0	4.4
			(12) Not saving to serve again	3.9	4.4

* Response scale: 1=Strong Negative to 5=Strong Positive

Attitudes

After the **Sanitation and Health** workshop, participants gave positive or strong positive responses to every item on the attitude scale. More than 70 percent of the workshop participants were strongly positive that food service personnel should know what bacteria cause food-borne illness (item 4); practicing good sanitation methods protects the reputation of food service operations (item 6); ensuring food safety is one of the most important responsibilities of a food service worker (item 7); keeping hot foods hot and cold foods cold is one of the most important ways to prevent food-borne illness (item 1); it's important to control flies, roaches, and rats in the food service area (item 2); food service personnel should avoid wearing nail polish (item 3); it's important to sanitize dishes and utensils even after they've been washed in a good detergent (item 8); and it's important for food service personnel to wash their hands before going on duty (item 9).

The majority (i.e., more than 50 percent) also were strongly positive that the NET lending library is a useful resource (item 5); people are the main source of bacteria which cause food-borne illness (item 10); chemicals and cleaning products should not be stored with food products (item 11); and food served but not eaten should not be saved to serve again (item 12).

Even before the workshop, participants had strong positive attitudes about most of these items. In fact, there were only three items where performance was short of acceptable levels on the pretest. Performance on these three items (4, 8, and 9) rose to acceptable levels after the workshop. Performance also improved for all other items on the attitude scale.

EFFECTS OF THE ADVANCED MENU PLANNING CURRICULUM

PARTICIPANTS GAVE THE WORKSHOPS HIGH RATINGS, SHOWED IMPROVEMENT IN KNOWLEDGE TEST SCORES, AND REPORTED POSITIVE ATTITUDES TOWARD NUTRITION AND MENU PLANNING CONCEPTS AND REQUIREMENTS.

SCALE	AVERAGE SCORE BEFORE	DURING	AFTER	CRITERION
SATISFACTION		3.5		3.5
KNOWLEDGE	67	83	92	70
ATTITUDES	4.0		4.3	4.0

EFFECTS OF THE ADVANCED MENU PLANNING WORKSHOP

Participants gave the workshops high ratings, showed improvement in knowledge test scores, and reported positive attitudes toward nutrition and menu planning concepts and requirements:

* The average rating was 3.5 (sd=.7), indicating participants were well satisfied with the workshop.

* At the close of the workshop, nearly 90 percent of the participants performed at or above the criterion for acceptable performance on the knowledge test (70 percent correct response) and nearly 20 percent gave correct answers to all 20 questions. At the beginning of the workshop, only about half (53 percent) performed at an acceptable level and less than 5 percent gave correct answers to all 20 questions. Average percents correct before, during, and after the workshop were 67, 83, and 92 (raw score averages of 14, 17, and 18 with standard deviations of 4, 4, and 2). This improvement in knowledge was substantial and statistically significant, $F(2,88)=41.82$, $p<.001$.

* On the 5-point attitude scale, 75 percent scored at or above the criterion of 4.0 and 4 percent gave strong positive responses to all 12 items on the scale. Before the workshop, only 48 percent responded with so much favor toward menu planning concepts and requirements. The average score on the attitude scale rose from 4.0 before the workshop to 4.3 afterwards (raw scores of 47.5 and 51.0 with standard deviations of 5.6 and 4.5). This improvement was statistically significant, $F(1,55)=32.71$, $p<.001$.

When knowledge-test performance of the 45 individuals whose pre-, post-, and follow-up-test records could be matched was compared with performance of the 398 individuals for whom pretest and/or posttest data were available, the sample was found to have performed slightly less well than the whole group on the posttest. The average score for the sample was 15.5 (s=3.9) while that for the whole group was 16.7 (s=3.7), $t(441)=2.20$, $p<.05$. Because performance of these two groups on the pretest was not significantly different, it was concluded the sample provided a conservative estimate of the workshops' effect on participant knowledge.

There was no evidence of culture bias in the tests. Average percents correct on pre- and posttests in workshops with a high percentage ($P > 50$) of Hispanic participants were 62 and 76 compared with 60 and 75 obtained in workshops with a low percentage ($P < 20$) of Hispanic participants.

SATISFACTION

MORE THAN 90 PERCENT OF PARTICIPANTS WERE "WELL" OR "VERY WELL" SATISFIED WITH THE ADVANCED MENU PLANNING WORKSHOP.

DIMENSION RATED	PERCENT RESPONDING* "VERY WELL"	"WELL"	AVERAGE SCORE
COMMUNICATION OF OBJECTIVES	61	34	3.5
TRAINER'S PRESENTATION & MANNER	63	30	3.5
OPPORTUNITIES FOR DISCUSSION	73	23	3.6
COURSE CONTENT	61	32	3.5
HANDOUTS & VISUAL AIDS	63	32	3.5

* RESPONSE SCALE: 1=NOT AT ALL 2=SOMEWHAT 3=WELL 4=VERY WELL

Satisfaction

More than 90 percent of participants were "well" or "very well" satisfied with the **Advanced Menu Planning** workshop. They gave the workshop uniformly high marks so that it earned scores above the criterion value of 3.5 on every dimension rated: communication of objectives, trainer's presentation and manner, opportunities for discussion, course content, and handouts and visual aids.

KNOWLEDGE

AN ITEM INQUIRING ABOUT FOOD SOURCES OF THIAMINE AND NIACIN WAS THE ONLY ONE PARTICIPANTS HAD DIFFICULTY ANSWERING AFTER THE WORKSHOP.

PERCENT OF PARTICIPANTS GIVING CORRECT ANSWERS TO QUESTIONS ON THE KNOWLEDGE TEST

	BEFORE	DURING	AFTER		BEFORE	DURING	AFTER
(17) NEED FOR VARIETY	73	82	96	(4) BUYING GUIDE: SECTIONS	60	78	87
(5) FOOD SOURCES: B	27	47	64	(1) : USES	69	89	100
(7) : C	87	93	96	(6) REIMBURSABLE: ITEMS	47	76	76
(10) : IRON	77	91	98	(16) : MILK	53	91	98
(11) : A	73	91	100	(14) LABELS	53	84	89
(12) : FIBER	89	93	100	(8) CYCLE MENUS	51	56	76
(13) COMPONENTS: SNACKS	82	96	98	(2) MATH: FRACTIONS	76	93	100
(15) : LUNCH	64	80	96	(3) : DECIMALS	91	96	100
(19) : LUNCH	91	93	100	(9) : CALCULATING AMOUNTS	51	69	84
(18) : BREAKFAST	67	84	100	(20) NET LIBRARY PROCEDURES	64	80	80

Knowledge

An item inquiring about food sources of thiamine, niacin, and iron was the only one participants had difficulty answering after the workshop (item 5). Inspection of incorrect responses to this item suggests they had trouble accepting the idea that nuts and seeds are sources of these vitamins and minerals. The only other item for which performance fell short of acceptable on the posttest was a question about cycle menus (item 8). The majority of those who got it wrong did give a partially correct answer, however. They knew that cycle menus should last at least two weeks and be used over again, but they failed to acknowledge that it is also correct to modify cycle menus to accommodate new recipes and holidays.

At the beginning of the workshop, acceptable performance was already achieved on 9 of the 20 items. More than 70 percent of workshop participants already knew that eating a variety of foods is the best way for most people to obtain a balance of nutrients in the diet (item 17); citrus fruit is a main source of vitamin C (item 7); peanut butter on raisin toast is an iron-rich snack (item 10); spinach, sweet potatoes, broccoli, and apricots are good sources of vitamin A (item 11); adding whole grain cereals increases fiber in the diet (item 12); a CCFP snack should provide at least two of the four components (item 13); fluid milk, meat/alternate, vegetables and/or fruit, bread/alternates are components of the CCFP lunch menu pattern (item 19); a quart is 1/4 of a gallon (item 2); and 3/4 = .75 (item 3).

There were eight items for which performance rose to acceptable levels during the workshop. Participants learned that dry beans or peas may count as meat/alternate or vegetable/fruit but not both in the same CCFP meal (item 15); the CCFP breakfast pattern is fluid milk, fruit/vegetable, and bread/alternate (item 18); the sections of the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS are meat/alternate, vegetables and fruits, bread/alternates, milk, other foods (item 4); the most important use of the GUIDE is to help determine how much food is needed to meet meal requirements (item 1); to be reimbursable, a meal must contain required food components and be served in correct quantities (item 6); lowfat fluid milk is a reimbursable component (item 16); the first ingredient listed on a food label is the predominant ingredient by weight (item 14); and the NET Lending Library Collection has a two volume catalog to help patrons choose appropriate materials (item 20).

There was one item for which performance fell just short of acceptable at the close of the workshop but rose to acceptable levels at the follow-up. When questioned two months after the workshop, more than 70 percent of respondents knew how to use information about purchase units and yield to calculate amount of ground beef needed to serve 50 one-ounce portions (item 9). Percent correct response to the item about cycle menus also rose to an acceptable level at follow-up (item 8).

ATTITUDES

ALTHOUGH ATTITUDES WERE GENERALLY FAVORABLE, PARTICIPANTS WERE NOT POSITIVE THAT THE FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS IS EASY TO USE OR THAT THE NET LENDING LIBRARY COLLECTION IS A USEFUL RESOURCE.

AVERAGE SCALE VALUE OF RESPONSES* TO ITEMS ON THE ATTITUDE SCALE

		BEFORE	AFTER			BEFORE	AFTER
(2)	MENU PLANNING: VARIETY	4.3	4.4	(4)	FOOD BUYING GUIDE: HELPFUL	3.9	4.4
(1)	: VITAMIN C	4.3	4.4	(8)	: EASY	3.0	3.4
(9)	INTRODUCING NEW FOOD: ROLE	4.3	4.5	(5)	READING LABELS: PURCHASING	4.0	4.5
(10)	: LIKES	3.8	4.0	(7)	: REIMBURSEMENT	4.0	4.4
(11)	COMPLETING FORM 1530	4.3	4.5	(3)	CALCULATING AMOUNTS: SKILL	3.8	4.1
				(6)	: MONEY	4.2	4.4
				(12)	USEFULNESS OF NET LIBRARY	3.5	3.9

* RESPONSE SCALE: 1=STRONG NEGATIVE TO 5=STRONG POSITIVE

Attitudes

Although attitudes were generally favorable, participants were not positive that the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS is easy to use. Only 53 percent of the respondents agreed the GUIDE is easy to use, 29 percent were neutral, and 18 percent disagreed the GUIDE is easy to use (item 8). As a result, the average scale value for this item, even after the workshop, fell short of the 4.0 criterion for acceptable performance. In reviewing this result, NET Program staff concluded the guide is not, in fact, easy to use and having only 18 percent of participants opining it difficult is an acceptable level of performance for this item.

There were seven items on the attitude scale for which performance exceeded the acceptable level even before the workshop was conducted. More than 70 percent of respondents were already convinced that serving many different foods with a variety of textures and colors encourages children to eat well (item 2); menus should be planned to provide good sources of iron and vitamin C every day (item 1); providers should encourage children to try new foods (item 9); it is important for providers to complete Form 1530 correctly and completely (item 11); providers should read the ingredients label on a package of processed food before buying it (item 5); the ingredients list on nutrition labels helps providers decide if a food meets program requirements (item 7); and calculating the amount of food needed for each menu item saves money (item 6).

There were three items on which performance rose from unacceptable to acceptable levels. More than 70 percent of workshop participants came to accept the ideas that providers should avoid serving only those foods they know children will eat (item 10); the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS is a very helpful guide for menu planning and food purchasing (item 4); and it is important for providers to know how to calculate math problems involving fractions and decimals (item 3).

Although only 18 percent of the respondents strongly agreed the NET Lending Library Collection is a very useful resource, more than half were at least slightly positive about the collection (item 12).

CONCLUSIONS

THE SANITATION AND HEALTH AND ADVANCED MENU PLANNING WORKSHOPS HELPED CNP PARTICIPANTS LEARN CHILD-NUTRITION-RELATED CONCEPTS, SKILLS, AND VALUES.

* PARTICIPANTS WERE SATISFIED WITH THE WORKSHOPS.

* THE WORKSHOPS WERE EFFECTIVE:
  - THE CURRICULA WERE AT THE RIGHT LEVEL OF CHALLENGE.
  - AFTER THE WORKSHOPS, PARTICIPANTS KNEW MORE AND HELD MORE POSITIVE ATTITUDES TOWARD CHILD-NUTRITION-RELATED CONCEPTS AND PRACTICES.

* WORKSHOP PERFORMANCE WAS UNIFORMLY STRONG:
  - THERE WERE ONLY ONE OR TWO ITEMS ON ANY OF THE TESTS AND SCALES WHERE PERFORMANCE FELL SHORT OF ACCEPTABLE.
  - THE FOLLOW-UP EXERCISES MAY HAVE REINFORCED AND EXPANDED PARTICIPANTS' MASTERY OF THE LEARNING OBJECTIVES.

CONCLUSIONS

The Sanitation and Health and **Advanced Menu Planning** workshops helped CCFP participants learn child-nutrition-related concepts, skills, and values. Participants were satisfied with the workshops and knew more and held more favorable attitudes after workshops than they did before. These data suggest that, because of their participation in NET workshops, educators and food service personnel in CCFP facilities are better prepared to manage food service so that children are sure to be served meals and supplements that are safe and nutritious. It can be concluded, therefore, that the workshops are effective and that they are potential contributors to improved CCFP performance.

The curricula were at the right level of challenge. Before the workshops, knowledge scores were above the "guessing level" of 20 percent correct but below preset criteria for acceptable and mastery level performance. These data indicate participants were familiar with the subject matter but were not well informed in content areas covered in the workshops. The magnitude and statistical reliability of changes in the knowledge and attitude scale data help a) validate the need for these two workshops and b) demonstrate that single, brief (i.e., four to eight hours) workshops can be relied on to teach CCFP participants things they need to know about menu planning and sanitation. The consistently high ratings given the workshop by participants is further evidence of the usefulness of workshops as a primary tool for training and technical assistance in support of CNP.

For these two workshops, performance was uniformly strong. There were only one or two items on any of the tests and scales where knowledge test or attitudes scale scores fell short of preset criteria for acceptable performance.

In the current study, as in studies of other NET workshops, knowledge was found to improve during the two months after the workshop. On the average, scores on the follow-up test were a few points higher than those on the posttest administered at the close of the workshop. Usually, slight declines in test scores are expected after a training experience, unless there are intervening events to refresh or reinforce acquired knowledge. In previous studies, several possible explanations for gains in knowledge after NET workshops have been explored. The most promising explanation is the hypothesis that it is the follow-up exercise itself which serves to refresh and reinforce participants' child-nutrition-related knowledge. The follow-up may help remind them to look again at materials they received during the workshop and review food service management concepts and recommendations that were included in the curriculum.

RECOMMENDATIONS

FEEDBACK TO TRAINERS AND ROUTINE MONITORING OF WORKSHOP PERFORMANCE ARE STRATEGIES THAT CAN BE APPLIED TO ENSURE THAT WORKSHOPS CONTINUE TO BE EFFECTIVE IN MEETING NUTRITION TRAINING NEEDS OF THE NET PROGRAM'S TARGET POPULATION.

* SINGLE, BRIEF WORKSHOPS CAN BE RELIED ON TO IMPROVE CNP PARTICIPANTS' KNOWLEDGE OF AND ATTITUDES TOWARD CHILD-NUTRITION-RELATED CONCEPTS AND PRACTICES.

* ALTHOUGH THE WORKSHOPS PERFORMED VERY WELL, THERE ARE A FEW AREAS WHERE IMPROVEMENTS CAN BE MADE:

  - TRAINERS SHOULD BE MADE AWARE THAT PARTICIPANTS IN THE **SANITATION AND HEALTH** WORKHSOP FREQUENTLY HOLD THE MISCONCEPTION THAT REFRIGERATION "KILLS" MOLD AND BACTERIA.

  - BECAUSE SUBSTANTIAL NUMBERS OF PARTICIPANTS IN THE **ADVANCED MENU PLANNING** WORKSHOP BELIEVE THE FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS IS DIFFICULT TO USE, IT MAY BE NECESSARY TO GIVE THEM MORE PRACTICE OR DEVELOP FOLLOW-UP EXERCISES TO ENCOURAGE THEM TO USE THE GUIDE.

  - MORE EMPHASIS ON UTILITY OF THE NET LENDING LIBRARY COLLECTION MAY BE NEEDED TO PROMOTE USE OF THE COLLECTION BY PARTICIPANTS IN THE **ADVANCED MENU PLANNING** WORKSHOP.

RECOMMENDATIONS

Feedback to trainers and routine monitoring of workshop performance are strategies that can be applied to ensure workshops continue to be effective in meeting nutrition training needs of the NET Programs' target population. This study demonstrated the utility of single, brief workshops as means for improving child-nutrition-related knowledge and attitudes of CCFP participants. The NET State Plan for 1988 and 1989 stipulates that results of CNP reviews will be used to help identify topics for new workshops. This procedure should amplify the synergistic effects of NET and the reimbursement programs. To ensure that workshops continue to be effective in meeting training needs diagnosed during the reviews process, it is important that arrangements be made to routinely monitor workshop performance and provide feedback to trainers.

Because the workshops are so brief, trainers need to have as much information as can be provided to assist them in deciding how to allocate learning time. They need information about areas where workshop participants are already knowledgeable as well as information about areas where the curriculum fails to facilitate mastery of the learning objectives. It is recommended, therefore, that trainers receive copies of this evaluation report. Particular note should be made of the following points:

* Participants in the **Sanitation and Health** workshop frequently hold the misconception that refrigeration "kills" mold and bacteria.

* Participants in the **Advanced Menu Planning** workshops had difficulty accepting the idea that nuts and seeds are sources of thiamine, niacin, and iron.

* Because substantial numbers of participants in the **Advanced Menu Planning** workshop believe the FOOD BUYING GUIDE FOR CHILD NUTRITION PROGRAMS is difficult to use, it may be necessary to give them more practice or develop follow-up exercises to encourage them to use the GUIDE.

* More emphasis on utility of the NET Lending Library collection may be needed to promote use of the collection by participants in the **Advanced Menu Planning** workshop.

Continued monitoring of workshop performance and additional research is needed to evaluate the usefulness of follow-up exercises as means for promoting further learning by workshop participants. Results of the present study suggest that follow-up exercises may help remind participants to review and perhaps expand on what they have learned. More data are needed, however, to determine what content and format would be most cost-effective in helping CNP participants build on the knowledge base established during NET Program workshops.

Appendix B

Behavioral Outcomes of the Texas Nutrition Education and Training Program's **Advanced Menu Planning** Workshops: February through June, 1987

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Abstract

Daily Menu Records (Form 1530) were collected before and after the Nutrition Education and Training (NET) Program's **Advanced Menu Planning** workshop from groups of licensed child care centers that did and did not participate in the training. Only 10 percent of the records were found to be properly completed and in full compliance with Child Care Food Program (CCFP) meal patterns. Problems diagnosed before the workshop persisted after the training. Across groups, 65 percent failed to properly specify amounts of food prepared and 70 percent of those whose quantities could be evaluated specified amounts that fell short of minimum requirements. These results suggest that other forms of assistance and guidance are needed to amplify synergism of NET workshops and CCFP requirements.

EXECUTIVE SUMMARY

Training provided through the Nutrition Education and Training (NET) Program's **Advanced Menu Planning** workshop did not increase participants' compliance with Child Care Food Program (CCFP) menu planning and record keeping requirements.

Percent of Daily Menu Records Complying with Program Requirements

	Workshop (17 centers)			Comparison (14 centers)			
Objective	(n=85) Before	(n=81) 6 After	(n=78) 12 After	(n=69) Before	(n=63) 6 After	(n=64) 12 After	(n=440) Overall
1530 PROPERLY COMPLETED	40	40	40	35	40	40	40
MEAL PATTERNS SATISFIED	25	20	15	30	15	15	15
COMBINED CRITERIA	10	10	5	10	5	10	10

EXECUTIVE SUMMARY

The Texas Nutrition Education and Training (NET) Program works synergistically with the Child Care Food Program (CCFP) to assure that children have opportunities to learn about and to practice good eating habits in child care facilities. During Fiscal Year 1987, results of administrative reviews of CCFP were used as a guide in developing the NET Program's **Advanced Menu Planning** workshop to help correct common CCFP menu planning and record keeping problems. The workshop was offered for the first time in the Spring of 1987. Between February and June a total of 430 CCFP sponsors and providers attended the workshop.

Two studies were conducted to evaluate outcomes of this new workshop. The first study demonstrated that **Advanced Menu Planning**, like other NET Program workshops, can be relied on to improve participants' child nutrition related knowledge and attitudes. The present study was conducted to determine what impact the workshop had on actual menu planning and record keeping.

Procedures. Daily Menu Records (Form 1530) were collected from 17 child care centers whose staff participated in the workshops and from a comparison group of 14 centers whose staff could have but did not participate in the workshops. The lunches described on the menu records were evaluated against criteria for proper completion and compliance with CCFP meal pattern requirements. Comparisons were made between groups and for times 6 weeks before and 6 and 12 weeks after the workshops.

Results. The workshop did not have the expected facilitating effects on menu planning and record keeping. The pattern of diagnosed strengths and weaknesses was the same before and after the workshops and in groups of centers that did and did not participate in the training. In only 10 percent of the cases was there complete compliance with CCFP requirements.

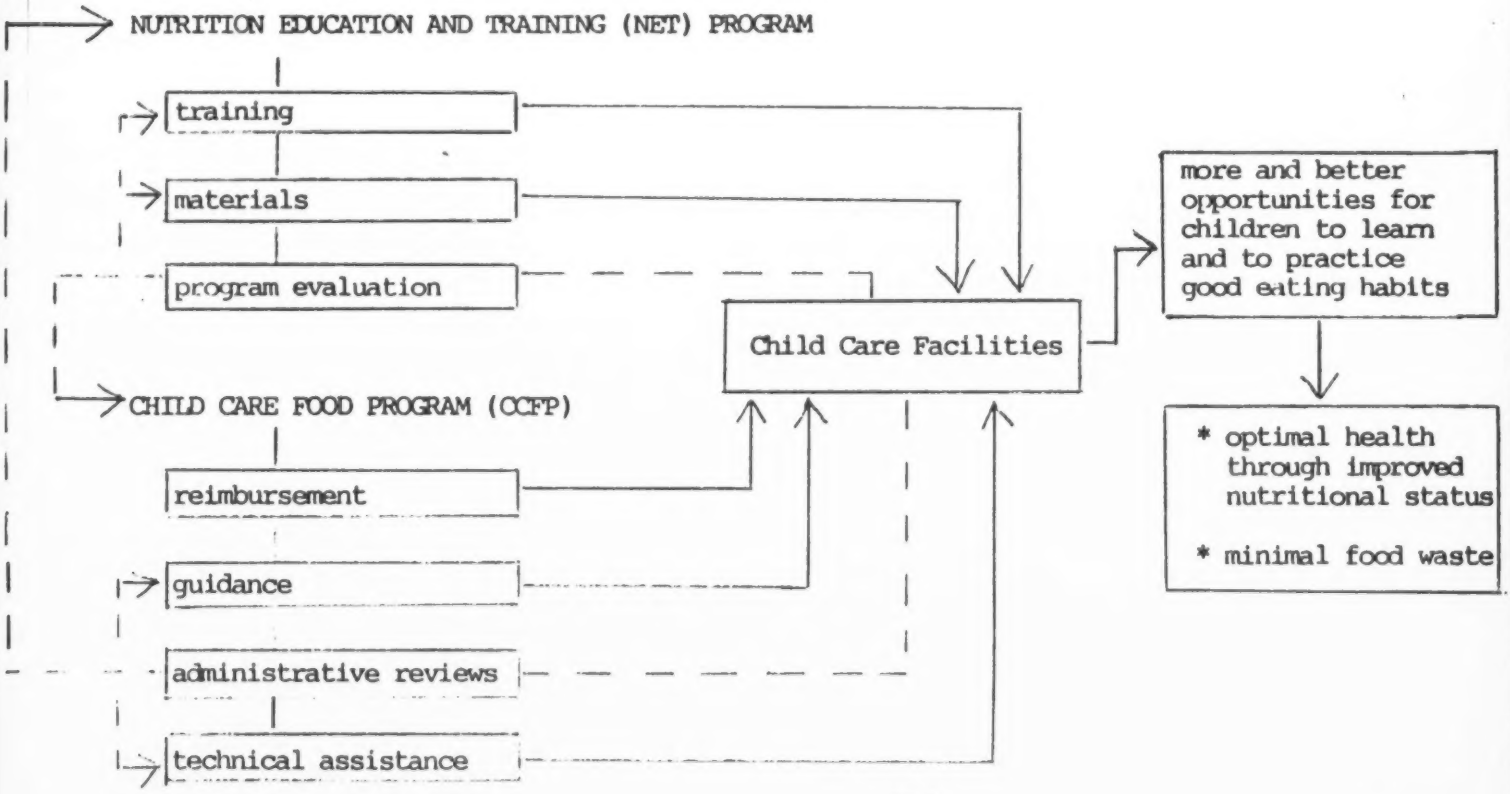
The most frequently occurring problems concerned food quantities: 65 percent of the 440 records included in this evaluation failed to properly specify amounts of food prepared, and 70 percent of those whose quantities could be evaluated specified amounts that fell short of minimum requirements.

Conclusions and Recommendations. This study showed and/or confirmed that: 1) there are widespread problems with menu planning and record keeping in CCFP; 2) meals served in CCFP facilities may not be providing children enough food to supply the nutrients they need for proper growth and health; and 3) training provided in brief workshops cannot, by itself, solve these problems.

Other forms of assistance and guidance are needed to amplify synergism of NET workshops and CCFP requirements in providing children with opportunities to improve their nutritional status. Options include distributing standardized menus and supplying CCFP contractors with information about common problems and how to solve them.

BACKGROUND

The Texas Nutrition Education and Training (NET) Program works synergistically with the Child Care Food Program (CCFP) to assure that children have opportunties to learn about and to practice good eating habits in child care facilities.



BACKGROUND

The curriculum of the Nutrition Education and Training (NET) Program workshop entitled **Advanced Menu Planning** was developed to assist in solving common problems detected during administrative reviews of the Child Care Food Program (CCFP). Reviews conducted during 1986 showed the majority of CCFP contractors were having difficulty 1) planning menus to meet the U.S. Department of Agriculture's (USDA) Child Nutrition (CN) Program meal pattern requirements, and 2) properly completing the required Daily Menu Record (Form 1530).

The workshop was offered for the first time in the spring of 1987. Its first participants were staff of licensed child care facilities and sponsors of registered family day care homes in CCFP. Because costs of the workshops are borne by the NET Program, it is offered free of charge to nonprofit child care facilities participating in CCFP. NET Program workshops are conducted by registered/licensed dietitians in the participants' own communities. Twenty-one **Advanced Menu Planning** workshops were scheduled between February and June for a total enrollment of 430 child care sponsors and staff.

In addition to its being a principal component of technical assistance provided by the Texas Department of Human Services (DHS) for CN Program contractors, the workshop meets DHS continuing education requirements for staff of licensed day care centers. Workshop certificates are awarded to verify participation in 7.5 hours of approved continuing education. As an additional incentive for their participation, each participant receives a copy of the workbook used during the training session and copies of posters and pamphlets which will assist them in planning nutritious menus. Each child care center or sponsoring organization represented in the workshop receives a set of produce posters and USDA commodity fact sheets.

The full-day workshop begins with information about meal pattern requirements and nutrition labeling. During the second and third hours of the workshop, participants practice and are coached in planning menus to meet USDA's CN meal pattern requirements. After the lunch break, there is a half-hour session on use of the **Food Buying Guide for Child Nutrition Programs** followed by 45 minutes of guided practice in calculating quantities of food needed to meet meal pattern requirements. Participants then learn how to complete Daily Menu Records, get to review properly completed records, and receive instructions regarding program eligibility forms. The workshop closes with feedback to participants regarding their mastery of the the workshop's knowledge learning objectives.

PURPOSE AND PROCEDURES

Child care centers' Menu Records were analyzed before and after the NET Program's **Advanced Menu Planning** workshop to determine extent to which the training helped solve problems detected during CCFP administrative reviews.

* After the workshops, were Menu Records properly completed?

* Did menus meet USDA Child Nutrition meal pattern requirements?

* What were relative strengths and weaknesses of menu planning and record keeping in centers that participated in the workshops and in those that did not participate in the workshops?

PURPOSE AND PROCEDURES

This study was conducted to evaluate the workshop's effectiveness in helping participants plan menus to meet CN Program meal pattern requirements and properly complete Daily Menu Records. A separate study demonstrated the workshop's effectiveness in facilitating improvements in participants' child nutrition related knowledge and attitudes. That study showed that participants were well satisfied with the workshop (the average rating was 3.5 on a 4-point scale), learned child nutrition related concepts and skills (average test scores rose from 67 to 92 percent correct response), and became more strongly positive toward menu planning concepts and requirements (average scores increased from 4.0 to 4.3 on the 5-point attitudes scale). It was concluded that, because of their participation in the workshop, CCFP contractors were better prepared to manage food service so that children are sure to be served nutritious meals and supplements.

In the present study child care centers' Daily Menu Records were analyzed before and after the workshop to determine extent to which actual menu planning and record keeping behavior were improved. Scores representing proper completion of the menu record and compliance with meal pattern requirements were calculated. Results were compared for times before and after the workshop and for workshop participants and nonparticipants using between groups repeated measures analysis of variance procedures.

Data Collection.

Records were requested from 20 child care facilities that participated in the **Advanced Menu Planning** workshops and from a comparison group of 20 facilities that were eligible to attend but did not. A random numbers table was used to assist in drawing these samples from the CCFP rolls with the restriction that each facility in the sample must be its own CCFP sponsor and that it did not sponsor any other centers or day homes. This restriction was applied so that it would be easy to communicate with the facilities about exactly which sets of menu records were needed and to assure that facilities in the workshop group had direct access to CCFP staff who had participated in the workshop.

Three five-weekday sets of menu records were requested from all forty facilities: the first set was for a period 6 weeks before the workshop; the second set was 6 weeks after the workshop; and the final set was for the week beginning 12 weeks after the workshop. All three sets were requested in a letter mailed to the child care center director approximately 12 weeks after the workshops. Complete sets of Daily Menu Records were supplied by 17 centers in the workshop group and 14 centers in the comparison group. Only 3 centers failed to reply to the mailed request; 4 sent copies of their menus but did not supply copies of Form 1530; and 2 centers could not supply records for all 3 time periods because they closed for the summer.

Evaluation of Menu Records

Points were assigned if 1) food items were described in enough detail to show that they were allowable meal components; 2) amounts of food prepared was specified with enough precision to compare against CCFP minimum quantities; 3) all four lunch components were included in the menu; and 4) enough food was prepared to make available to each child at least the CCFP minimum quantity of each component.

Texas Department of Human Resources

Form 1530 March 1981

Name of Center or Day Home: [redacted] Child Care Center

Agreement No: TX-[redacted]001

DAILY MENU RECORD

Date: 5-11-87

	1. MEALS	2. MENU	3. FOOD ITEMS USED	4. AMOUNT PREPARED	5. NUMBER SERVED: Infants - Ages (months): 0-3	4-7	8-11	Children - Ages (years): 1-2	3-5	6 up	Program Adults	Non prog Adults
BREAKFAST	1. Milk 2. Fruit or Juice 3. Whole Grain or Enriched Bread or Bread Alternate	Milk Corn Flakes Peaches	Milk	2 gals.				18	14		4	
			Corn Flakes	1¼ pkgs. (36½ oz)	NUMBER OF COMPLETE SECONDS SERVED							
			Peaches	1 can								
PM SNACK	CHOOSE 2 OF THE FOLLOWING 1. Milk 2. Vegetable(s) and/or Fruit(s) 3. Whole Grain or Enriched Bread or Bread Alternate 4. Meat or Meat Alternate	Apple Slices Ritz Crackers	Apple Slices	1½ bags (3# 6 oz)				20	22			
			Ritz Crackers	1½ boxes (1# 10 oz)	NUMBER OF COMPLETE SECONDS SERVED							
LUNCH	1. Milk 2. Meat or Meat Alternate 3. Vegetables and/or Fruits (2 or more) 4. Whole Grain or Enriched Bread or Bread Alternate 5. Other Foods	Milk Chicken Patties Carrots Green Beans Bread Pineapple Bits	Milk	2¼ gals.				20	22		10	
			Chicken Patties	1 box (5# 1½ oz)	NUMBER OF COMPLETE SECONDS SERVED							
			Carrots	2 #10 cans								
			Green Beans	2 #10 cans								
			Bread	1½ loafs (1½ #)								
			Pineapple Bits	2 #10 cans								
				78								

(cont. on back)

Evaluation of Menu Records

Four scores were calculated for each set of menu records. The first two scores described the degree to which the record was properly completed, and the last two indicated extent to which the menu was planned to satisfy CN meal pattern requirements.

Coding for proper completion. In order to determine whether or not the Menu Record was properly completed, all items on each day's lunch menu were inspected and points given if a) the item was described in sufficient detail and b) enough information about quantities of food prepared was supplied to enable comparison against CN meal pattern requirements.

The item description score was calculated by assigning one point for an adequate description in columns 2 ("menu") and 3 of the record ("food items used") for each of the four meal pattern component listed in column 1 for the lunch menu. Total points were divided by the number of days represented in the week (some menu sets included fewer than five days because of holidays, staff development, or field trips). The maximum score was four.

The score for quantity specification was calculated by assigning 1/2 point for any kind of quantitative information supplied in column 4 ("amount prepared") for each of the lunch components listed in column 1. Another 1/2 point was added if the information supplied in columns 4 and 5 ("number served") was sufficient to enable comparison of actual amounts against meal pattern requirement. Values were summed across the set and then divided by number of days represented. The maximum specifications score was four.

Coding compliance with meal patterns. CCFP meal patterns are a guide to well-balanced meals. The lunch pattern is designed to provide each child with approximately one-third of the child's recommended dietary allowance (RDA) of nutrients needed for growth and health. Stipulated minimum amounts of each meal component as listed in the **Food Buying Guide for Child Nutrition Programs** must be made available to each child in order for the CCFP contractor to be reimbursed for the meal.

A score for lunch components was developed by counting the number of matches between components listed in column 1 and allowable items identified in columns 2 and 3. Totals were divided by the number of days in the set so that the maximum components score was four.

The score for amounts prepared was calculated by assigning one point for each component for which the amount specified in column 4 matched or exceeded the required minimum quantity. The comparison quantities were computed by the NET Program dietitian who was principal investigator in this study. Counts for each menu were summed across the set and then divided by the number of days in that week so that the maximum score was four.

RESULTS

The pattern of strengths and weaknesses in menu planning and record keeping was the same before and after the workshop and in groups that did and did not participate in the training.

Average Scores on Evaluation Scales with 4 as Maximum Value

Objective	Workshop (17 centers) (n=85) Time 1	(n=81) Time 2	(n=78) Time 3	Comparison (14 centers) (n=69) Time 1	(n=63) Time 2	(n=64) Time 3	(n=440) Total
1530 PROPERLY COMPLETED:							
Items fully described	3.64	3.58	3.58	3.61	3.74	3.66	3.63
Quantities specified	3.31	3.30	3.72	3.38	3.45	3.31	3.35
REQUIREMENTS SATISFIED:							
Components present	3.99	3.91	3.94	3.90	3.97	3.97	3.95
Amounts adequate *	2.97	2.55	2.34	2.57	2.56	2.53	2.59
COMBINED CRITERIA *	3.56	3.43	3.35	3.39	3.42	3.38	3.43
*	n=33	n=33	n=35	n=27	n=30	n=26	n=178

n's for these evaluations include only those records for which amounts could be determined

RESULTS

There were no significant differences in scores before and after the workshop or between groups that did and did not participate in the NET Program's **Advanced Menu Planning Workshop.** Scores on some dimensions appeared to rise slightly from before to after the workshop (e.g., scores for quantities specified rose from 3.3 to 3.7) while others declined (e.g., scores for amounts prepared declined from 2.9 to 2.3). But these changes were not statistically significant.

Performance was best for components: across the board, the average was 3.95 with standard deviation of .28, indicating that lunch menus nearly always included all four of the required meal pattern components.

Performance was poorest for amounts of food prepared: the average was 2.59 with standard deviation of 1.2, indicating that quantities were inadequate for at least one and sometimes two or more of the meal components. These averages do not include cases for which quantities were not specified. If there was too little information available to make a determination of amount prepared the item was treated as a missing case rather than as a "0". These calculations also excluded cases with as many as 6 infants included in the number served. Accommodating serving sizes for infants made it difficult to compare results across groups and times. With these exclusions, the number of records in the workshop group was reduced from approximately 80 to 30 records per time. The number of records in the comparison group shrank from approximately 65 to 25 per time.

Providers appeared to be reasonably consistent about fully describing food items: the average score on this dimension was 3.63 (standard deviation of .64). Examples of item descriptions that failed to earn points are "pizza", "bread", and "crackers". These descriptions are too general to allow the evaluator to judge whether or not the item is allowed as a meal component. Examples of item descriptions that earned full credit are "fried boneless fish fillet--unbreaded", "sliced whole wheat bread", and "frozen spinach".

Scores for quantities specified were slightly less satisfactory than for item descriptions. The overall average of 3.35 (with standard deviation of .89) suggests that inadequate information was supplied for at least one meal component in each lunch menu. Examples of entries that failed to earn points are "1 can", "1 head of lettuce", "5 hamburger patties", and "3 cartons of milk". This level of specification does not allow the evaluator to determine whether or not enough food was prepared to meet requirements for minimum amounts stipulated in the **Food Buying Guide for Child Nutrition Programs.** Examples of specifications that earned full credit are "three 44-oz cans", "one 40 ounce bag", "2 2/3 gal", and "35 cups".

The most frequently occurring problems concerned food quantities: more than half of the records failed to properly specify amounts of food planned and more than two-thirds of those whose quantities could be evaluated specified amounts that fell short of minimum requirements.

Percent of Menu Records Complying with Program Requirements

Objective	Workshop (17 centers) (n=85) Time 1	Workshop (17 centers) (n=81) Time 2	Workshop (17 centers) (n=78) Time 3	Comparison (14 centers) (n=69) Time 1	Comparison (14 centers) (n=63) Time 2	Comparison (14 centers) (n=64) Time 3	(n=440) Overall
1530 PROPERLY COMPLETED:							
Items fully described	75	70	70	70	75	70	70
Quantities specified	45	45	45	40	40	45	45
REQUIREMENTS SATISFIED:							
Components present	99	90	95	95	95	95	95
Amounts adequate *	40	25	25	40	30	35	30
COMBINED CRITERIA *	10	10	5	10	5	10	10
*	n=33	n=33	n=35	n=27	n=30	n=26	n=184

n's for these evaluations include only those records for which amounts could be determined

When data were compiled to show how many of the menu records earned perfect scores on each of the dimensions evaluated, results confirmed findings of CCFP administrative reviews: the majority of contractors were having difficulty planning menus to meet meal pattern requirements and properly completing the Daily Menu Record. These difficulties persisted even after staff participated in the NET Program's **Advanced Menu Planning** workshop.

The most frequently occurring problems concerned food quantities: 65 percent of the 440 records included in this evaluation failed to properly specify amounts of food prepared, and 70 percent of those whose quantities could be evaluated specified amounts that fell short of minimum requirements.

Only five percent of the 440 records included in this evaluation failed to include all four lunch components, but thirty percent did not provide food item descriptions in sufficient detail to enable the evaluator to decide whether or not the items were allowable meal components.

When dimensions were combined, 60 percent of the records were found short of proper completion and 85 percent failed to satisfy meal pattern requirements. When all four criteria were combined, 90 percent of the 440 records were found to be out of compliance with at least one of the program requirements.

CONCLUSIONS

Training provided in the NET Program's **Advanced Menu Planning** workshop did not "solve" menu planning and record keeping problems in CCFP.

* After the workshop, Daily Menu Records showed the same number and kinds of problems as they had before.

  - o Irrespective of staff participation in the workshop, only 10 percent of the 440 records evaluated in this study were in compliance with all program requirements.

  - o The most serious problem was with amounts of food prepared: in only 30 percent of the cases did amounts of food meet CCFP requirements for minimum amounts.

* Results of this study converge with those of previous NET Program evaluations to demonstrate that:

  - o Children may not be getting enough food in CCFP facilities to support proper growth and health; and

  - o Although brief workshops can be relied on to improve participants' child nutrition related knowledge and attitudes, they cannot, by themselves, effect immediate changes in behavior.

CONCLUSIONS

Results of this study lead to two important conclusions: 1) there are, indeed, widespread and serious problems with menu planning and record keeping in the Child Care Food Program, and 2) training provided in a single session of the NET Program's **Advanced Menu Planning** workshop will not, by itself, solve these problems.

After the workshop, Daily Menu Records showed the same kinds and numbers of problems as they had before. A scant 10 percent of the 440 menu records evaluated in this study met all criteria for compliance with CCFP requirements. This low level of compliance described performance before and after the workshop in groups that did and in groups that did not participate in the training.

The most serious problem was with amounts of food prepared. In only 30 percent of the cases did amounts for all lunch components meet CCFP requirements for minimum quantities. That means that 70 percent of the lunch menus did not give children the opportunity to eat enough food to provide them with at least one-third of their Recommended Dietary Allowance for proper growth and health. This finding becomes especially alarming when combined with results of previous NET evaluation studies showing that, even when minimum portions are served, menus planned in licensed child care centers provide children with substantially less than the appropriate RDA amounts of food energy and iron.

One explanation of this kind of problem is the complexity of menu planning. Previous research has shown that child care center menus planned by "experts" and presented in text books as models for providers to follow have some of the same deficiencies as are observed in menus planned by staff of licensed day care centers in Texas. NET Program staff also have observed that the **Food Buying Guide for Child Nutrition Programs** is not easy to use. In fact, they offer a half day workshop devoted to the topic of "kitchen math" with the objective of teaching food service personnel how to do the calculations required to determine amounts of food to prepare to meet CN meal pattern requirements.

Task difficulty is not the whole explanation of menu planning and record keeping problems in CCFP. The tasks of describing food items and specifying quantities are not difficult ones. Yet, despite the fact that a block of the workshop time was spent teaching participants how to supply the necessary information, item descriptions and quantities specification on the Daily Menu Record were no better after the workshop than before. Although they are not difficult, these tasks are time consuming. It takes longer to write "saltine crackers" and to read the label and write out "1 44-oz can" than to jot "crackers" and "1 can" in appropriate columns of the Daily Menu Record. Unless the person completing the record is impressed with the importance of supplying detailed information, they will find it easier to persist with familiar and less time-intensive habits.

Other forms of assistance and guidance are needed to amplify the synergistic effects NET workshops and CCFP requirements can have on children's opportunities to practice good eating habits in child care facilities.

* In addition to improved training, alternatives for assuring that meals served in child care facilities give children ample opportunities to practice eating habits that will improve their nutritional status include:

  - o Providing child care centers with preplanned cycle menus and standardized recipes;
  - o Keeping CCFP contractors informed about common problems and how to solve them;
  - o Developing a system of follow-up exercises and correspondence to remind and encourage participants to apply concepts and skills they learn during NET workshops; and
  - o Encouraging NET Program staff to investigate alternatives for increasing the impact that training has on participant behavior.

RECOMMENDATIONS

Results of the present study add their mite to the weight of the evidence against relying on single, brief workshops to effect changes in participant behavior. Previous studies have demonstrated that NET Program workshops, including the **Advanced Menu Planning** workshop, consistently prove effective in helping child care personnel 1) acquire child-nutrition-related knowledge and 2) develop favorable attitudes toward nutrition education and food service management concepts and procedures. With nearly as much consistency, these studies have shown that workshops have little or no immediate impact on participant behavior. It appears that other forms of assistance and guidance are needed to amplify the power that workshops have to bring about behavioral changes that are needed to assure that children in CCFP facilities are given ample opportunties to acquire nutrients they need for proper growth and health.

One alternative is to provide child care centers with preplanned cycle menus and standardized recipes. The NET Program currently has a contract with Texas Women's University to develop a three-week cycle menu using a variety of ethnic foods well accepted in all regions of Texas, planned according to USDA meal pattern guidelines, incorporating standardized recipes, and checked for nutritional adequacy in computerized nutrient analysis. Target dates for initial distribution of these materials is Fall 1988.

Other action that can be taken is to develop a system for keeping CCFP contractors informed about common problems and how to solve them. Results of this study, for example, might be included in a newsletter to CCFP contractors along with a list of materials they can borrow from the NET library to help them improve menu planning and record keeping in their child care facilities. Contractors also should be encouraged to send representatives to the NET Program's more basic workshops on menu planning and kitchen math.

In their search for ways to improve NET workshop performance, NET Program staff have considered a number of alternatives for follow-up exercises and "reminders" to help participants apply the concepts and skills they acquire during the workshops. One promising possibility is development of a monthly planning calendar that includes "thoughts for the day" about menu planning and nutrition education lesson planning. Items included in the "thoughts" could remind CCFP participants about "how to" and "the importance of" planning menus to meet meal pattern requirements and properly completing the Daily Menu Record.

Because this study indicates that children may not be getting enough food to meet their needs, especially their needs for energy and iron, it seems imperative that NET Program staff continue to investigate alternatives for increasing the impact that training has on participant behavior, thereby increasing the synergism of NET and CCFP.

Appendix C

EVALUATION REPORT

Profiles of Nutrition Education and Training (NET) Program Library Patrons: July 1986-1987

Cindy Roberts-Gray and Selena Sullivan
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Texas Department of Human Services MC 234E
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Abstract

A mailed survey of Nutrition Education and Training (NET) Program library patrons was conducted in July 1987 to assist in developing strategies for selective promotion of the library collection. Respondents were grouped on the basis of priority in NET's target populations. Responses to items on the questionnaire were compared across groups. Results showed slight differences between groups that can be leveraged to promote increased use of the library collection and improved synergism with the Child Care Food Program without putting additional strain on scarce resources.

By using information about current patrons in the program's priority populations as a guide in promoting the library, the Texas Nutrition Education and Trianing (NET) Program can expect to work within budgetary and staffing constraints to continue improving use of its lending library collection.

Dominant characteristics of NET Library Patrons

	Priority Populations: Schools & Child Care (n=41)	Other Groups: Gov't Agencies, Health Care (n=52)
Job	Educator	Nutritionist
Use NET Collection	2-5 times per year	2-5 times per year
Other Resources Used	Public libraries and Education Service Centers	Universities
Source of Information about NET Collection	Catalog and workshops	Colleagues and catalog
Perceived Barriers to Increased Use	Inconvenience of lending procedures	Materials not sufficient for their purposes

EXECUTIVE SUMMARY

The Nutrition Education and Training (NET) Program's lending library collection was established in 1983 to promote nutrition learning in schools and child care facilities throughout the state. By providing educators and food service personnel with ready access to child-nutrition-related teaching and food service management materials, the collection helps achieve the overall goal of the U.S. Department of Agriculture's Child Nutrition Programs: optimal health and well-being for the Nation's children through improved nutritional status.

Due primarily to distribution of the NET media catalog, use of the library has increased in recent years. At the same time, budgetary and organizational constraints forced a decrease in library staffing. This study was conducted to assist in developing alternatives for increasing the library's reach into the NET Program's priority populations without increasing staffing requirements.

Procedures. A questionnaire was mailed to NET library patrons in July 1987. Items on the questionnaire inquired about borrowing habits, perceived barriers to use of the collection, and suggestions for improving library services. Item responses were tabulated to provide profiles of patrons in different population groups.

Results. Results confirmed previous studies indicating that, although they are top priorities for the NET Program, child care and school personnel currently constitute less than half of NET's library patrons:

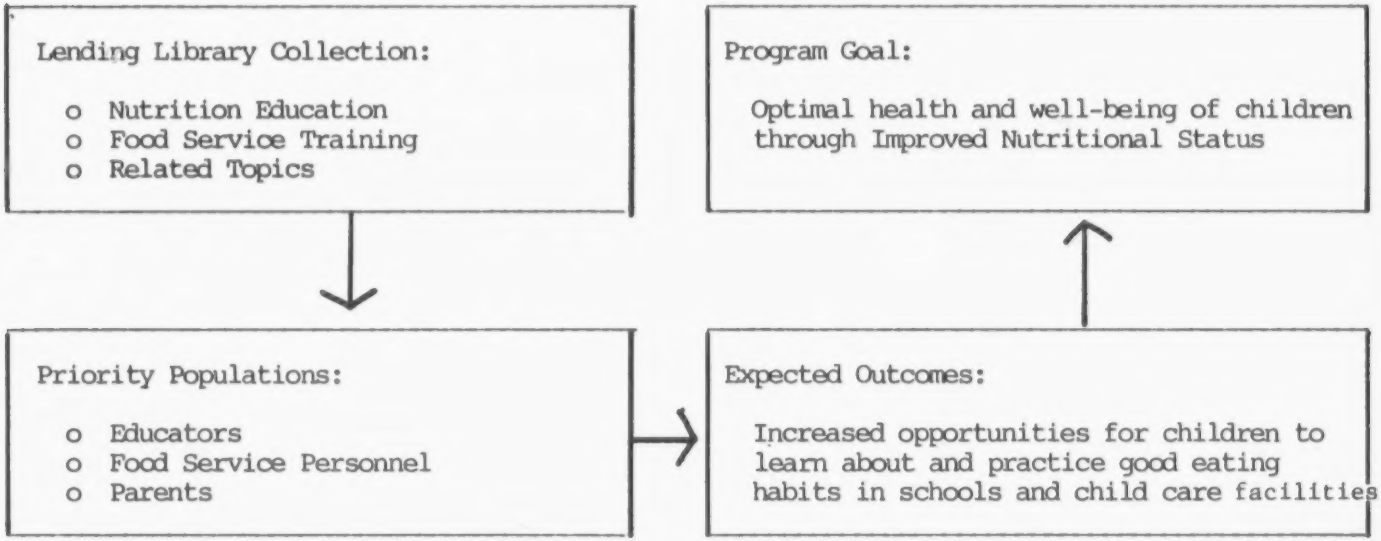
Although their borrowing patterns are similar, these patrons have a different profile from those in other groups of library users: The majority are educators. The catalog was the most frequently cited means by which they learned of the collection, but substantial numbers heard of the collection in NET workshops and in articles in child care journals. They rely on public libraries and education service centers for additional nutrition education materials. Their principal complaint against the NET collection is their perception that its lending procedures are inconvenient.

Conclusions and Recommendations. By using profiles and preferences of patrons in NET's priority populations as guides in promoting the library, the Texas NET Program can expect to work within budgetary and staffing constraints to improve use of its lending library collection.

Profiles outlined in the present study suggest that efforts to promote the collection be focused on day home providers and child care food service personnel. NET workshops, journal articles, and cooperation with Child Care Food Program monitors and selected public libraries are the most promising channels for reaching these populations.

BACKGROUND

The Nutrition Education and Training (NET) Program's Lending Library Collection was established in 1983 to promote nutrition learning in schools and child care facilities throughout the state.


Lending Library Collection:
o Nutrition Education
o Food Service Training
o Related Topics
Program Goal:
Optimal health and well-being of children through Improved Nutritional Status
Priority Populations:
o Educators
o Food Service Personnel
o Parents
Expected Outcomes:
Increased opportunities for children to learn about and practice good eating habits in schools and child care facilities

BACKGROUND

Texas's Nutrition Education and Training (NET) Program's lending library collection provides educators, school and child care food service personnel, and parents with ready access to current and high quality child-nutrition-related teaching and food service management materials. When these media are used to enrich children's opportunities for learning about and practicing healthy eating habits, they help achieve the overall goal of the U.S. Department of Agriculture's (USDA) Child Nutrition Programs: optimal health and well-being for the Nation's children through improved nutritional status.

The NET Program's lending library collection is maintained at the headquarters complex of the Texas Department of Human Services (TDHS). TDHS is the state agency responsible for administering the NET Program. It also administers selected elements of the Child Nutrition Programs: the Child Care Food Program (CCFP), National School Lunch and School Breakfast Programs for private schools, and the Summer Food Service Program for eligible nonprofit organizations. Personnel in schools and child care facilities participating in these programs are priority populations for NET lending library services.

The library collection includes materials on nutrition education, food service management as it applies in schools and child care settings, and related topics such as diet therapy, general nutrition, and training. Materials are available in audio-visual and printed media. Many of the materials are produced in both English and Spanish translations.

Requests to borrow items from the collection are made through the mail. Materials are delivered and returned by post or parcel service. Other than the cost of return postage and insurance for films, use of the NET lending library collection is free of charge. In an effort to remain attentive to user interests and needs, the NET Program routinely requests feedback on the library materials and services by enclosing a short questionnaire with each item borrowed from the collection. Feedback from borrowers is used to help make decisions about additions to the collection and improvements in lending procedures.

As an aid to borrowers, catalogs describing the format, content, and target audience for each item in the collection have been distributed to child care facilities and schools participating in CCFP and other Child Nutrition Programs administered through TDHS and to selected others. Availability of the collection is advertised during nutrition education and food service management workshops conducted by the NET Program's consulting nutritionists and in articles published by NET Program staff in child care and nutrition education journals.

BACKGROUND

Texas's Nutrition Education and Training (NET) Program's lending library collection provides educators, school and child care food service personnel, and parents with ready access to current and high quality child-nutrition-related teaching and food service management materials. When these media are used to enrich children's opportunities for learning about and practicing healthy eating habits, they help achieve the overall goal of the U.S. Department of Agriculture's (USDA) Child Nutrition Programs: optimal health and well-being for the Nation's children through improved nutritional status.

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The library collection includes materials on nutrition education, food service management as it applies in schools and child care settings, and related topics such as diet therapy, general nutrition, and training. Materials are available in audio-visual and printed media. Many of the materials are produced in both English and Spanish translations.

Requests to borrow items from the collection are made through the mail. Materials are delivered and returned by post or parcel service. Other than the cost of return postage and insurance for films, use of the NET lending library collection is free of charge. In an effort to remain attentive to user interests and needs, the NET Program routinely requests feedback on the library materials and services by enclosing a short questionnaire with each item borrowed from the collection. Feedback from borrowers is used to help make decisions about additions to the collection and improvements in lending procedures.

As an aid to borrowers, catalogs describing the format, content, and target audience for each item in the collection have been distributed to child care facilities and schools participating in CCFP and other Child Nutrition Programs administered through TDHS and to selected others. Availability of the collection is advertised during nutrition education and food service management workshops conducted by the NET Program's consulting nutritionists and in articles published by NET Program staff in child care and nutrition education journals.

PURPOSE

In order to develop alternatives for increasing use of the library in priority populations, questionnaires were mailed to library patrons to inquire about their use of the collection and suggestions for improving NET library services.

* What are demographic characteristics of NET Program library patrons?

* Are borrowing patterns in NET's priority populations different from those in other groups of library patrons?

* Are there differences among groups in how they came to hear of the NET library and what they perceive as barriers to increased use of the collection?

* What suggestions do patrons have for increasing use of the NET lending library collection?

PURPOSE

Previous studies of the NET library showed that, despite substantial gains in number of patrons, further effort was needed to increase use of the collection by members of NET's priority populations. Due primarily to publication and distribution of the NET media catalog, the average number of borrowers per month rose from 6 in 1984 to more than 20 throughout 1985 and 1986.

Although this gain was statistically significant and exceeded the goal set in the program plan for a 150 percent increase in use of the collection, it fell short of being fully satisfactory. Only 40 percent of NET library patrons were in NET's priority populations. Moreover, patrons in the priority populations used the collection less often than did those in other groups (e.g., nutritionists working in health care settings). More than half (65-75 percent) of borrowers from schools and child care settings used the collection only once in 24 months ending September 1986.

Despite overall increases in demand for services, budgetary and organizational constraints forced a decrease in library staffing from 2.5 professional and clerical positions in 1985 to 2.25 in 1987. Funding levels and, consequently, staffing are not expected to increase in the near future because of staff ceilings within TDHS and because the NET Program is still under continuing resolution in the U.S. Congress. It is important, therefore, that further efforts to promote use of the collection in NET's priority populations be designed to avoid additional strain on stretched resources.

This study was conducted to assist in developing alternatives for increasing the library's reach into the NET Program's priority populations without incurring additional operating expense. Data were collected and analyzed to help tailor promotional efforts and lending practices to the demographic characteristics, borrowing patterns, and suggestions of educators and food service personnel working in schools and child care settings.

PROCEDURES

Questionnaire responses were crosstabulated with the respondent's population designation.

Texas Department of Human Services

John H. Winters Human Services Center • 701 West 51st Street
Mailing Address: P.O. Box 2960 • Austin, Texas 78769

1836 TEXAS SESQUICENTENNIAL 1986

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Will you help us please? We need your answers to these 12 questions in order to evaluate services of the Nutrition Education and Training (NET) Program Lending Library Collection. Your answers will be combined with those of other NET library patrons to help make decisions about what to add to the collection and how to improve the lending service. Enclosed is a postage-paid return envelope to assist you in returning this questionnaire to us by August 15. Thanks!

1. Please estimate the number of times you have used the NET library in the past 12 months. _____

2. How did you hear about the NET lending library? (Circle as many as apply)
   1 Attended a NET workshop
   2 Received copies of NET media catalogs
   3 Read about it in a journal article (e.g., in the Texas Child Care Quarterly)
   4 Heard about it through colleagues/networking
   5 Other (please specify) _____

3. For what type of agency do you work? (Circle only one)
   1 Public school
   2 Private grade school or high school
   3 Child Care Center
   4 Family day care home
   5 Hospital
   6 Texas Department of Human Services
   7 Other government agency
   8 College or university
   9 Headstart
   10 Other _____

4. What is your job? (Circle only one)
   1 Teacher
   2 Food service personnel
   3 Food program specialist
   5 Nutritionist
   6 Licensing representative
   7 Medical personnel

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PROCEDURES

A questionnaire was mailed to each individual on the list of NET library patrons in July, 1987. Respondents were asked to:

* estimate the number of times they used the collection during the preceding 12 months;

* report how they had heard about the NET library;

* indicate the type of work they do (e.g., teacher in a child care center or nutritionist working in health care setting);

* describe their use of the media catalog, the spanish language collection, and the library feedback form;

* list other nutrition education resources used during the preceding 12 months;

* identify factors that prevented them from using the NET collection more often;

* suggest types of materials they would like to see in the Spanish language collection;

* express an opinion regarding the best location for updated volumes of NET media catalogs; and

* make other suggestions for improving the NET lending library.

One hundred seventy-five questionnaires were mailed. Six were never delivered. Ninety three were completed and returned. The response rate was 57 percent.

Data were analyzed by grouping respondents in descending order of program priority: child care personnel, school personnel, staff of other government agencies, personnel in health care settings, and others. Item responses were compared across groups to answer four general questions:

1) What are demographic characteristics of NET Program library patrons?

2) Are borrowing patterns in NET's priority populations different from those in other groups of library patrons?

3) Are there differences among groups in how they came to hear of the library and what they perceive as barriers to increased use of the collection? and

4) What suggestions do patrons have for increasing use of the NET lending library collection?

Although educators working in schools and child care centers are among the largest single groups of library patrons, child care and school personnel make up less than half the total of NET library patrons.

Characteristics	Percent of Total					
	Child Care (n=20)	Schools (n=21)	Gov't Agencies (n=27)	Health Care (n=17)	Others (n=8)	Total (n=93)
JOB:						
educators	15	20	5	1	0	40
food service personnel	5	1	1	1	1	10
nutritionists	1	1	10	15	5	30
others	1	1	0	10	5	20
LOCATION:						
communities LT 10,000						25
10,000-49,000						20
50,000-499,000						20
Austin						15
SanAntonio, Dallas, Houston						15

RESULTS

Approximately 45 percent of the survey respondents were child care and school personnel. Because this result is so similar to percentages reported in previous studies of the NET lending library, it suggests the sample of survey respondents is representative of the population of library patrons.

Twenty of the 93 individuals who returned completed questionnaires were staff of child care facilities. This group included 2 teachers and 1 nutritionist from head start facilities, 13 teachers and 1 food service person from other child care centers, 3 CCFP sponsors, but no day home providers.

The group of 21 school personnel who returned questionnaires included 14 teachers, 1 food service person, 2 nutritionists, 2 other individuals from public schools, and 1 teacher and 1 other from private schools.

The 27 representatives of other government agencies were from the Texas Department of Human Services, Texas Department of Mental Health and Mental Retardation, the Texas Agricultural Extension Service, and Texas universities and colleges.

There were 17 survey respondents, most of them nutritionists, who work in health care settings: hospitals, clinics, and nursing homes. Eight of the survey respondents represented other situations within TDHS's purview such as family violence shelters and consultants to nursing homes.

A surprisingly large percentage of NET library patrons live in small towns in Texas. Slightly more than a quarter live in communities with populations of less than 10,000. In fact, there are nearly as many NET library patrons residing in communities smaller than 5,000 (10-20 percent) as there are living in Austin (where the library is housed) or in San Antonio, Dallas, and Houston combined.

Borrowing patterns in NET's priority populations were similar to those in other groups of NET library patrons.

July 86-July 87	Percent within Groups: Child Care (n=20)	Schools (n=21)	Gov't Agencies (n=27)	Health Care (n=17)	Other (n=8)	Total (n=93)
USED THE COLLECTION:						
at least once	80	80	80	90	90	85
more often	65	50	70	60	60	60
USED THE CATALOG:						
at least once	90	85	80	85	75	80
more often	80	60	65	55	65	60
PROVIDE FEEDBACK:						
usually	90	80	65	80	75	80
always	60	60	30	50	50	50
USE OTHER RESOURCES:						
Dairy/Heart	90	70	45	90	50	70
university	10	10	35	50	50	30
public library	55	15	10	25	50	25
ed service center	15	40	15	20	0	20

Although a few (15 percent) of the survey respondents indicated they had not used the collection during the 12 months preceding July 1987, the majority (60 percent) averred they had used the collection at least twice in that interval. The average rate of borrowing was 2 to 5 times in 12 months.

With minor exceptions, borrowing patterns were similar across groups of library patrons:

* The vast majority (80 percent) of those who had used the library at least once also reported they had used the catalog at least once, and many (60 percent) reported more frequent use of the catalog. The modal response in all groups except public schools was that the catalog had been used "a few" times. Three of the public school respondents reported their schools did not have a copy of the catalog.

* Representatives from other government agencies admitted to being less systematic about returning their feedback forms with items borrowed from the library. Even so, more than half of each group of respondents reported they usually provide feedback.

* Fewer of those in NET's priority populations (10 percent) reported using universities as a source of nutrition education materials than did those in other groups (35-50 percent). Not surprisingly, personnel in public schools more often reported using their regional education service centers as a nutrition education resource. Personnel in child care centers more often used nutrition education resources from public libraries.

* Except for those representing other government agencies, a majority of respondents reported they also had used materials supplied by the Dairy Council and/or Heart Association. Across groups, 70 percent of NET's library patrons reported using materials from these sources.

* Two of the Agricultural Extension Service agents reported they had used Spanish versions of materials from the NET library. None of the other 91 respondents had used Spanish materials.

Word-of-mouth and receipt of the catalog were the two most frequent means by which patrons learned of the NET library collection, and inconvenience of borrowing procedures was the factor cited most often as a barrier to increased use in NET's priority populations.

	Percent within Groups					
July 86-July 87	Child Care (n=20)	Schools (n=21)	Gov't Agencies (n=27)	Health Care (n=17)	Other (n=8)	Total (n=93)
SOURCE OF INFORMATION:						
Colleagues	20	50	55	70	75	50
Catalog	75	40	50	45	40	50
Workshop	40	10	5	0	0	10
Journal articles	15	5	5	0	0	5
REASONS FOR NOT USING:						
Inconvenience	40	40	20	40	25	30
Materials not sufficient	20	20	50	30	40	30
Seasonal needs	30	25	40	15	25	30
Cost	20	25	10	25	10	20
Access	15	15	5	5	10	10
Have my own materials	15	5	10	0	0	5

There were differences in the way groups of library patrons came to hear of the NET collection. In all groups except child care personnel, word-of-mouth (i.e., colleagues) was the most frequently cited source of information about the lending library and receipt of the catalog was cited second most often.

For child care personnel, the catalog was the most frequently cited information source with workshops in second place. Forty-percent of child care personnel and hardly anyone in any of the other groups cited workshops as one of the ways in which they came to hear about the NET lending library. Child care personnel also cited journal articles as a source of information more often than did members of other groups (15 and 0-5 percent, respectively).

Inconvenience of the library's lending procedures was the factor most often cited by school and child care personnel as a barrier to increased use of the collection. Written comments volunteered by some of the respondents underscored concern about convenience. Four individuals remarked that materials often were not available when they were needed, that too much lead time and bookkeeping was required, and that there was too much paper work.

Only 20 percent of school and child care personnel were of the opinion that the library's materials are not sufficient for their purposes whereas at least 30 percent in each of the other groups held that opinion. One individual remarked that they needed more materials for adults, another opined that materials were outdated, and a third said the materials should count toward training credits.

More than 25 percent of the survey respondents indicated they need nutrition education materials only once or twice a year. Patrons in the health care group were less likely to indicate seasonal need for nutrition materials, perhaps because nutrition education is fundamental to health care but must compete with other topics and activities in child care and schooling situations.

Approximately one in five of the survey respondents cited costs as a barrier to increased use of the NET lending library collection. And only one in ten indicated that access to the collection was a factor forestalling expanded use of the NET lending library.

There was no concensus among patrons in NET's priority populations about the best location for updated volumes of the NET media catalogs or need for additional materials in the library's Spanish language collection.

	Percent within Groups					
July 86-July 87	Child Care (n=20)	Schools (n=21)	Gov't Agencies (n=27)	Health Care (n=17)	Other (n=8)	Total (n=93)
LOCATION FOR MEDIA CATALOGS:						
Agency library	20	30	25	5	10	20
Teacher resource room	40	20	5	5	0	15
Nutritionist's office	5	10	70	70	25	40
Food service department	5	5	15	5	10	10
DESIRED ADDITIONS TO SPANISH LANGUAGE COLLECTION:						
Audio-visual materials	15	5	30	40	10	20
Food service training	10	0	20	40	50	20
Children's books	25	0	5	5	25	10

The only groups having a majority opinion about the best location for future volumes of the NET media catalog were Government Agencies and Health Care facilities. Approximately 70 percent of respondents in these groups favored the nutritionist's office. Child care personnel showed a slight preference for locating future volumes of the NET media catalog in their centers' teacher resource room. Personnel in schools and "other" groups showed no convergence in their opinions about where to place the catalog.

Perhaps because they had never used Spanish language materials, most respondents expressed no preferences for additions to the collection. Overall, only 20 percent of the respondents were in favor of adding spanish language audio-visuals. Twenty percent were interested in translations of food service training materials. Only 10 percent saw need for additional spanish language children's books. The majority of those in favor of adding children's books were in the group of child care personnel: approximately a quarter of these indicated they would like to see more children's books in Spanish.

A few respondents took advantage of the opportunity to make suggestions about how NET lending library services could be improved. One individual suggested there is a need for more VHS tapes. Another recommended that paper work be reduced. Another suggested that library staff consider featuring a topic once a month and sending out a postcard announcement.

Two individuals made very positive comments about the assistance they received from the library clerk, and one commented the library is "a fabulous selection and wonderful resource."

CONCLUSIONS

There are slight differences between groups of patrons that can be leveraged to promote increased use of the library in priority populations without dramatically increasing overall demand for services.

* Day home providers are an easily accessible and still untapped market for NET lending library services.

* Child care and school food service personnel constitute another target of opportunity.

* Workshops and articles published in child care journals are channels for selectively reaching personnel in NET's priority populations.

CONCLUSIONS

Although their borrowing patterns are similar, library patrons in NET's priority populations have a different profile from those of other library users. Current patrons in NET's priority groups can be characterized as educators working in child care centers and public schools in small towns. Substantial numbers of them learned about the library in NET workshops and in articles published in child care journals. They use the library two to five times a year. They use the catalog. They do not use materials published in Spanish. They rely on public libraries and education service centers for additional nutrition education materials. Their principal complaint against the NET lending library is that its lending procedures are inconvenient. They are concerned about what they perceive as long lead times and excessive paper work.

The profile for other library patrons shows them to be nutritionists working in government agencies, health care, or human service activities. Colleagues are their principal source of information about the NET library. Like those in NET's priority populations, they use the library two to five times a year, use the catalog, and do not use materials published in Spanish. They rely on universities as a source of additional nutrition education materials. Their principal complaint against the NET lending library collection is that the materials are not sufficient for their purposes. Some indicated need for more materials for adults.

These profiles suggest several conclusions about opportunities for increasing use of the collection in NET's priority populations:

* Day home providers and child care food service personnel are easily accessible and still virtually untapped markets for NET lending library services. The group of survey respondents included three CCFP sponsors but no day home providers. Only 3 of the 41 child care and school personnel responding to this survey declared themselves to be food service personnel. Because day home providers and school and child care food service personnel have direct control over children's opportunities to practice healthy eating habits on an almost daily basis, it is very important to encourage them to learn as much as they can about how to plan and serve meals and supplements that encourage children to consume nutrients needed for proper growth and health;

* NET workshops, journal articles, public libraries in small towns, and regional education service centers appear to be the most promising channels for reaching members of NET's priority populations. These avenues were cited as sources of information and materials more often by those in NET's priority populations than by those in other groups; and

* It may be possible to increase use of the collection by making it more convenient for members of NET's priority populations.

RECOMMENDATIONS

By tailoring efforts to promote the library to fit profiles and preferences of patrons in priority populations, the NET Program can improve use of the collection without exceeding its ability to respond to increased demand.

* In order to reach more day home providers and food service personnel:
  - curricula of selected workshops for CCFP contractors can be adjusted to put increased emphasis on use of the library;
  - additional articles on the library can be developed for child care journals; and
  - possibilities for enclosing information about a "featured topic" in correspondence about results of CCFP administrative reviews can be evaluated in collaboration with CCFP contract monitors.

* To make it easer for NET's priority populations to use the library:
  - public libraries in small towns can be supplied with copies of NET media catalog and possibilities for inter-library loan arrangements can be investigated; and
  - research can be conducted to evaluate the hypothesis that lending procedures already have become more convenient in consequence of integrating the NET collection into the TDHS library's automated scheduling system.

RECOMMENDATIONS

In order to avoid the possibility of increasing demand for service beyond the program's capability to respond, further efforts to promote the library should be directed specifically to day home providers and food service personnel in child care facilities. Results of the present study suggest several possibilities for reaching this particular audience with information about the library:

* Adjuncts can be developed for curricula of the **Menu Planning and Kitchen Economy, Advanced Menu Planning, Off to a Good Start for Family Day Care,** and **Planning Nutritious Snacks** workshops to put additional emphasis on availability and utility of the NET lending library collection. One possibility is to include a closing exercise in which groups of workshop participants use the catalog to select materials to be sent to them as "homework" for additional training credit.

* Additional articles on the library can be developed for publication in child care journals. One possibility for developing such an article is to conduct a telephone interview with six or seven library patrons asking them to share their experiences and make suggestions to others about how the library can be used to enrich activities in child care centers and day care homes.

* It also may be desirable to work with CCFP contract monitors to evaluate desirability of enclosing information about a "featured topic" and a library order form in correspondents between the monitor and the sponsor regarding results of CCFP administrative reviews. In addition to enriching activities in child care settings, the library may prove to be a valuable source of information for helping contractors correct deficiencies detected during program reviews.

Possibilities for making it easier for NET's priority populations to use the library should be investigated. One possibility is development of inter-library loan arrangements between the TDHS library and public libraries in selected small towns. Because child care personnel among NET's library patrons rely on public libraries as a source of additional nutrition education materials, it would be convenient for them to do all their borrowing at that location and let the paper work be done between libraries.

Another possibility is to research the hypothesis that it has already become easier to borrow items from the NET collection because of its being integrated into the library's automated scheduling and distribution system. This possibility seems the more likely given the very positive comments from survey respondents about the helpfulness of the NET library assistant.

By using profiles and preferences of patrons in NET's priority populations as guides in promoting the library, the Texas NET Program can expect to work within budgetary and staffing constraints to improve use of its lending library collection.

Appendix D

EVALUATION REPORT

Strategies for Promoting Use of Nutrition Education Materials
November 1987

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Abstract

This study was conducted to evaluate relative effectiveness of workshops, turnaround sessions, and simple notification as strategies for promoting use of nutrition education materials in elementary schools. Data were collected at the beginning and end of the fall semester in groups of kindergarten and third grade classes on four campuses in the Austin Independent School District to measure curriculum implementation and nutrition learning outcomes of these three methods of teacher training. Criterion level curriculum implementation was more frequent in kindergarten workshop and turnaround groups, but learner outcomes were best in the third grade teacher-notification group. Because notification is not as cost-intensive as workshops, these results indicate that simply notifying teachers about availability of nutrition education materials is a cost-effective strategy for promoting nutrition learning in public schools.

Simply notifying teachers that materials are available may be the most cost-effective strategy for promoting effective nutrition education in public schools.

	Percent Achieving Criterion Level Performance After 10 Weeks of School				
	Teachers (n = 19)		Children (n > 300)		
Strategy	Acceptance	Use of HONEY	Knowledge	Attitudes	Food Choices
Workshop	80	50	80	80	20
Turnaround	60	30	60	60	20
Notification	20	20	80	60	30

EXECUTIVE SUMMARY

Distributing and promoting use of nutrition education materials for children is a major activity of the Texas Nutrition Education and Training (NET) Program. This activity helps assure that children are provided with opportunities to learn about and to practice good eating habits in schools and child care facilities. Its effects combine with those of other elements of the U.S. Department of Agriculture's Child Nutrition Programs to achieve the goal of optimal health and well-being of the Nation's children through improved nutritional status.

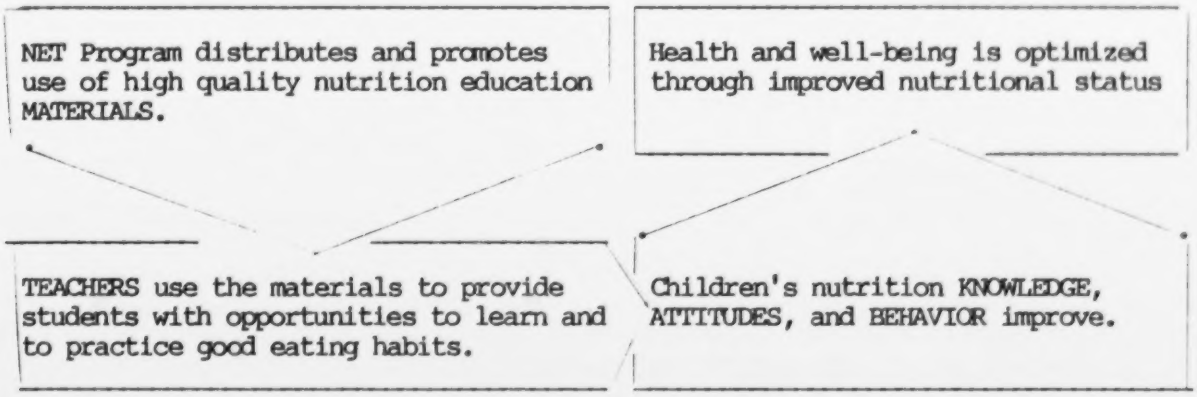
Purpose. This study was conducted to evaluate relative effectiveness of three alternatives for promoting use of nutrition education materials in elementary schools: 1) workshops, 2) turnaround, and 3) notification. Brief inservice workshops for teachers is the most frequently used method for introducing curriculum innovations in public schools. Utility of other, less cost-intensive methods needed to be evaluated, however, because the Texas NET Program has a limited budget and a primary focus on child care rather than public schools. Turnaround requires that workshops be conducted only for "lead" teachers who then share what they have learned with other teachers on their respective campuses. Notification is the least cost-intensive method for encouraging use of new materials, requiring only that teachers be notified of their availability.

Procedures. Groups of kindergarten and third grade classes on four campuses in the Austin Independent School District (AISD) provided four kinds of data with which to evaluate outcomes of these three methods of teacher training. Teachers completed a questionnaire describing their acceptance and use of the Health Objectives in Nutrition Education for Youth (HONEY), a curriculum developed in AISD during 1985 as a special NET Project. To measure nutrition learning outcomes in their classes, nutrition knowledge tests and attitude scales were administered at the beginning and end of the fall semester and the children's food choices were observed during a classroom activity at the end of the term. Criterion-references, analysis of variance, and chi-square procedures were applied to compare results of the different teacher training strategies.

Results. The majority of teachers accepted the idea that HONEY was nice to have. Kindergarten teachers in workshop and turnaround groups made the most use of HONEY. Performance on the nutrition knowledge test improved in all groups, with the greatest gains occuring in third grade teacher-notification classes. There was very little change in performance on the attitude scales. Good food choices were made more often in third-grade teacher-notification classes. Thus, although the frequency of criterion level performance appeared to indicate superiority of the workshop approach, evaluation of actual scale values showed notification to be a cost-effective approach for promoting nutrition learning in public schools.

BACKGROUND

By promoting effective use of nutrition education materials in schools and child care facilities, the Texas Nutrition Education and Training (NET) Program makes progress toward the goal of optimizing children's health and well-being through improved nutritional status.


NET Program distributes and promotes use of high quality nutrition education MATERIALS.
Health and well-being is optimized through improved nutritional status
TEACHERS use the materials to provide students with opportunities to learn and to practice good eating habits.
Children's nutrition KNOWLEDGE, ATTITUDES, and BEHAVIOR improve.

BACKGROUND

Distributing and promoting use of nutrition education materials for children is a major activity of the Texas Nutrition Education and Training (NET) Program. By helping teachers provide opportunities for their students to learn about and to practice good eating habits, this activity helps achieve the U.S. Department of Agriculture's goal for its Child Nutrition Programs (CNP): optimal health and well-being of the Nation's children through improved nutritional status.

During 1985, the Texas NET Program supported the Austin Independent School District's (AISD) development of the Health Objectives in Nutrition Education for Youth (HONEY) curriculum to address State mandated essential elements of instruction in health for kindergarten through grade three. HONEY includes units on nutrients, food sources, food choices, food handling, and meal planning. It specifes learning objectives, describes lesson plans, and identifies activities and resources to enhance nutrition learning. It encourages use of the NET Lending Library Collection and use of the school cafeteria as a learning laboratory for good food habits.

Results of pilot tests of the curriculum conducted by AISD's project staff during the fall of 1986 indicated that use of HONEY improved students' nutrition knowledge. Teachers who piloted the curriculum were very receptive to it, giving the HONEY materials consistently high ratings. Because it appeared to be an effective and attractive nutrition curriculum, NET Program staff began making plans to distribute and promote use of HONEY state-wide.

Inservice workshops for teachers is a strategy often employed to introduce new educational materials. Workshops are cost intensive, however, and NET Program staff wanted to evaluate utility of alternative, less expensive procedures for promoting use of HONEY. Feedback from teachers at schools where HONEY was piloted indicated favorable response to the idea of sending a lead teacher for inservice training and then having that teacher share information about the new curriculum materials during team meetings with other teachers at the school. In the educational research literature, this procedure is referred to as "turnaround". Another relatively less expensive strategy for introducing new materials is simply to place materials at the school and notify teachers of their availability.

During the 1987 school year, AISD agreed to participate in evaluating the relative effectiveness of workshops, turnaround, and notification as methods for promoting use of HONEY in elementary school classrooms.

PURPOSE AND PROCEDURE

This study was conducted to evaluate relative effectiveness of three alternatives for promoting use of nutrition education materials in elementary schools.

* Three kindergarten and three third grade teachers participated in a one-hour workshop introducing them to the HONEY curriculum.

* Four kindergarten and three third grade teachers learned about HONEY in turnaround sessions during team meetings with teachers who had participated in the workshops.

* Three kindergarten and three third grade teachers received no formal training but were notified HONEY was available for use in their classes.

PROCEDURES

Data were collected to evaluate implementation of HONEY and to measure learner outcomes in kindergarten and third grade classes whose teachers had 1) participated in a brief workshop, 2) received information about HONEY in a turnaround session, or 3) simply been notified that HONEY was available.

Three kindergarten and three third grade classes were assigned to each of the three teacher training methods. An extra kindergarten class was assigned to the turnaround group to yield a total of ten kindergarten and nine third grade classes on four AISD campuses. Because AISD's research policies require that participation agreements be negotiated with each school's principal and then with individual teachers on a project by project basis, assignment to groups was not random. It is probable that the majority of teachers in this study were more interested in nutrition education than is true of the general population of elementary school teachers.

Teacher training and pretesting took place during the second week of the fall semester. A ten-week instructional interval elapsed during which teachers could integrate HONEY into classroom activities. At the close of this ten week interval, posttests of knowledge and attitudes were administered, children's food choices were evaluated, and teachers responded to a questionnaire inquiring about amount and characteristics of nutrition education in their classrooms.

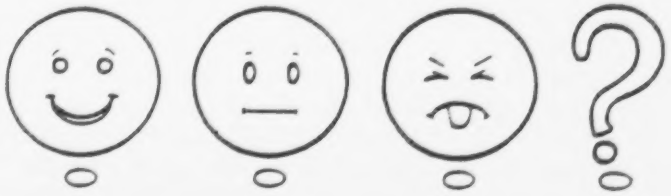
The one-hour in-service workshop was conducted on two of the four campuses in separate sessions for kindergarten and third grade teachers. The workshop leader was a registered dietitian who regularly conducts workshops for the Texas NET Program. The session included 1) a basic overview and steps for implementing the curriculum; 2) guidelines for coordinating the curriculum with State mandated essential elements of instruction; 3) guidelines for using the NET library, and 4) instructions for conducting turnaround sessions for other teachers in grade-level teams on their campus.

Three copies of the HONEY notebook were placed with the principals at all four schools. Each of the 19 teachers participating in this study received a project packet that included: 1) notification that HONEY was available, 2) teacher and student research project consent forms, 3) copies of tests/scales and instructions for administering them. Information about student test/scale performance in each of HONEY's five content areas was returned to teachers by the end of the third week of school. It was expected that teachers would use this information as a guide in selecting lessons to be implemented during the 10 weeks of instruction between pre- and post-testing.

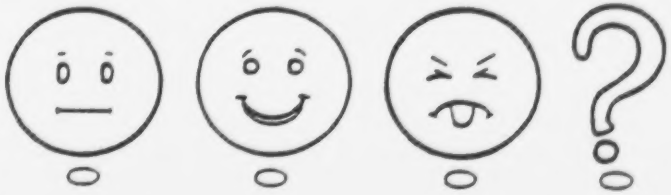
Measurement

Teachers completed a questionnaire describing their use of HONEY, students took nutrition knowledge and attitudes tests before and after ten-weeks of instruction, and their food choices were observed during a classroom activity at the close of the instructional period.

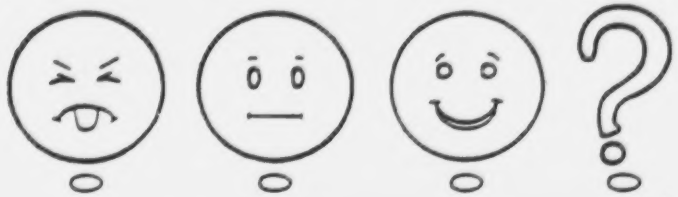
(1) How do you feel about foods that build teeth and bones?



(2) How do you feel about eating vegetables?



(3) How do you feel about tasting foods that you haven't seen before?



Measurement

Implementation of HONEY was assessed by analyzing teachers' responses to a questionnaire administered at the close of the first 10 weeks of school. Teachers were asked how much time they had spent teaching nutrition, what topics were covered, and what resources were used. Their answers to the questions were compared against a model for using HONEY as advocated in the workshop. The model calls for 1) allocating substantial amounts of time for nutrition learning (the criterion was an average greater than one hour per week), 2) using HONEY materials; 3) using materials from the NET Lending Library; 4) covering at least four of HONEY's five content areas; 5) involving the children in classroom cooking or food tasting activities; 6) using the school cafeteria as a learning resource; and 7) getting parents involved in their children's nutrition learning activities. The implementation score for each teacher was calculated by counting the number of points on which response to the questionnaire items indicated nutrition education in her classroom matched the model.

Three measures were made of learner outcomes: 1) nutrition knowledge tests developed and pilot tested by AISD were administered before and after the specified 10 week instructional period in five kindergarten and four third grade classes, 2) attitude scales developed and validated at Pennsylvania State University's nutrition research center were administered before and after the the instructional period in five kindergarten and five third grade classes; and 3) a food choices activity was conducted in all 19 classes at the close of the instructional period. Reliability coefficients for the twenty-item multiple-choice knowledge tests were .53 and .72 for kindergarten and third grades, respectively (Kuder-Richardson formula 20). For the Likert-type 33-point attitude scales, reliability coefficients for kindergarten and third grade were .66 and .72 (Spearman-Brown split half formula).

Food choice behavior was measured by counting the number of "good" selections made from tray of snack food items presented during a "food tasting party" held in the classroom at the conclusion of the first 10 weeks of school. Children came one at a time to the tray containing servings of grape juice, red soda pop, nut-and-raisin mix, presweetened cereal, celery-and-cheese, and cheese-flavored puff chips. This array of choices was based on expert opinions about food items with comparable familiarity, colors, and aromas and on pilot testing of the procedures in a summer school session for young children. In the present study, children were instructed to choose one "drink" and one "snack". A total of 365 children participated in the food tasting parties, generating 730 food choices.

Evaluation

Criterion references, analysis of variance, and chi-square procedures were applied to compare outcomes of the three methods of teacher training.

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* Do workshops and turnaround sessions result in better curriculum implementation and better learner outcomes than the notification method of teacher training?

* Does better curriculum implementation result in relatively better nutrition knowledge, attitudes, and behavior of the children?

* Are there differences in the pattern of nutrition instruction and nutrition learning in kindergarten and third grade?

Evaluation

HONEY implementation scores, knowledge test results, and attitude scale values were evaluated in two ways. First, criteria for acceptable performance were set and actual performance compared against these criteria. Second, statistical significance of differences by grade and by method of teacher training were evaluated using analysis of variance procedures. Food choices data were analyzed in separate chi-square tests of the number of good choices made by grade and by method of teacher training.

There were two criteria for acceptable implementation of HONEY: 1) teachers were judged to be receptive to HONEY if they answered that HONEY was "nice to have" or that their students "really needed this kind of instruction" and 2) teachers' use of HONEY was considered to be satisfactory if it matched at least six of the seven points in the model. Because there were only three classes per cell in the grade by teacher training method classification, separate analyses of variance were performed to evaluate differences between kindergarten and third grade and to evaluate differences associated with method of teacher training.

Criteria for evidence of acceptable levels of nutrition knowledge and attitudes were 70 percent favorable response. On the knowledge tests, those who correctly answered 14 or more of the 20 questions were considered to have acceptable levels of nutrition knowledge. On the attitude scale, scores of 24 or higher were considered acceptable. Because knowledge tests given to kindergarten and third grade students were not identical and because there were significant differences between campuses on the pretest, analysis of covariance was used to evaluate posttest scores with pretest as covariate (a common sense analogy of the covariance procedure is the practice of "handicapping" golf scores). Analysis of covariance also was used to evaluate attitudes data.

Post-measures of knowledge and attitudes were recoded as z-scores to enable inspection of the data sets for information about how levels of knowledge and attitudes were related to fidelity of HONEY implementation and to food choices behavior. Anticipated results were that:

* workshops and turnaround sessions would result in better curriculum implementation and better learner outcomes than the notification method of teacher training;

* higher fidelity implementation of the curriculum would result in more improvement in knowledge and attitude scores; and

* higher levels of knowledge and attitudes would result in more frequent selection of good foods from the snack trays.

RESULTS

HONEY implementation scores were higher in kindergarten classes whose teachers had participated in the workshop or turnaround sessions, but children's food choices and posttest scores were highest in third grade classes whose teachers simply were notified HONEY was available.

Average Rank on Measures of Nutrition Instruction and Learner Outcomes

Classes	(n)	Implementation	Posttests	Food Choices
Kindergarten				
Workshop	(3)	4	10	13
Turnaround	(3)	3	9	17
Notification	(4)	9	10	13
Third Grade				
Workshop	(3)	11	7	6
Turnaround	(3)	11	14	6
Notification	(3)	12	2	3

RESULTS

The six kindergarten classes whose teachers participated in workshops/turnaround were at the top of the list in terms of complying with the seven-point model used to evaluate implementation of HONEY. Their average was 5.1 on the 7-point scale whereas the average implementation score was only 2.7 in third grade teacher-notification classes. Kindergarten teachers in the notification group, however, achieved higher fidelity implementation of HONEY (their average score was 3.8) than third grade teachers who participated in workshops and turnaround sessions (their average was 3.2). These data demonstrate that implementation was not systematically related to intensity of teacher training (i.e., workshop, turnaround, notification).

Students in kindergarten classes with high fidelity implementation of HONEY scored toward the middle of the distribution of knowledge and attitude tests and were only slightly below the midpoint in frequency of good food selections in the food choices activity. But students in third grade teacher-notification classes (i.e., those with low implementation of HONEY) were at the top of the list for performance on knowlege and attitude posttests and they selected more nutritious items in the food choices activity. Fidelity of HONEY's implementation was not, therefore, systematically related to learner outcomes.

The highest and the lowest posttest scores were earned by third grade students. On the average, students in third grade teacher-notification classes ranked 2nd out of 19 while third grade teacher-turnaround classes ranked 14th. As a group, however, third grade students made better food choices than kindergarten students. On the average, third grade classes ranked 6th or higher while kindergarten classes ranked 13th or lower in percent of good food choices. Children's nutrition-related behavior, as measured by the food choice activity, was not systematically related to their nutrition knowledge or attitudes.

In summary, implementation of HONEY was better in kindergarten classes but food choices were better in third grade classes, irrespective of type of teacher training. Students' nutrition knowledge and attitudes were not related to implementation of the curriculum or to their food choices behavior.

Teachers Were Receptive to HONEY

The majority of teachers in this study accepted the idea that HONEY was nice to have or was really needed by their students, with kindergarten teachers making more use of the materials and concepts than third grade teachers.

Percent of Teachers Responsive to HONEY Materials and Concepts

Group	(n)	Kindergarten (10) Acceptance	Use*	Third Grade (9) Acceptance	Use	Combined (20) Acceptance	Use
Workshop	(6)	100	70	70	30	80	50
Turnaround	(6)	100	70	30	0	60	30
Notification	(7)	50	20	70	0	60	20
Combined	(20)	80	50	60	10	70	30

* Use = complied with at least 5 of 7 points in a model of effective use of HONEY.

Teachers' Were Receptive to HONEY

Eighty percent of kindergarten and 60 percent of third grade teachers indicated favorable attitudes twoard HONEY. Across grades, only 30 percent of teachers reported they were neutral about HONEY or felt they had no time for it.

Kindergarten teachers made more use of HONEY materials and concepts than did third grade teachers. Fifty percent of them and only 10 percent of third grade teachers complied with at least five of seven points in our model of effective use of HONEY. On this seven-point scale kindergarten teachers averaged 4.6 and third grade teachers 2.8 (standard deviations were 1.6 and 1.2) This difference was statistically significant, $F(1,13)=8.43$, $p<.05$.

Across grades, compliance with specific points in the model were: 1) 50 percent of the teachers averaged more than one hour per week on nutrition instruction, 2) 95 percent reported using the HONEY curriculum, 3) 65 percent used the NET lending library , 4) 40 percent covered four or more of HONEY's content areas (food handling was covered least often, especially in third grade classes), 5) 75 percent presented classroom cooking or food tasting activities, 6) 20 percent included visits to the school cafeteria (but none included presentations by food service personnel), and 7) 20 percent made assignments that involved parents in their children's nutrition learning activities.

All of the teachers at both grade levels reported spending at least one hour on nutrition instruction during the 10 weeks between pretesting and posttesting of their students' nutrition knowledge/attitudes. Fifteen percent (i.e., 1 kindergarten teacher and 2 third grade teachers) indicated they had devoted more than 20 hours to teaching nutrition during that 10 weeks. Teaching nutrition with health was the most frequent method of presentation, with 8 of the 9 third grade and 2 of the kindergarten teachers reporting this instructional strategy. Kindergarten teachers were more likely to integrate nutrition instruction into other subjects such as language arts and science: 6 of the 10 reported using this strategy.

Eight of the 9 third grade teachers and 3 kindergarten teachers reported using materials supplied by the Dairy Council and/or Heart Association to support nutrition instruction in their classes.

There appeared to be a trend toward more acceptance and use of HONEY in groups of teachers that had more intensive training. Half of those in the workshop group, for example, and only 20 percent in the notification group were identified by the model as users of HONEY. As has been discussed already, however, this trend was not systematic or statistically significant.

Children's Knowledge Test Scores Improved

In all groups performance on the nutrition knowledge test was better at the tenth week than it was at the beginning of the school year.

Number Correct on the 20-Item Nutrition Knowledge Test

Group	(n)	Kindergarten (64)		Third Grade (77)		Combined (141)	
		Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Workshop	(48)	12	16	10	16	11	16
Turnaround	(54)	12	14	10	14	11	14
Notification	(39)	11	14	10	20	10	17
Combined	(141)	12	15	10	16	11	16

Children's Knowledge Test Scores Improved

The average percent correct response on nutrition knowledge tests rose from 55 to 80. On pretest, fewer than one fourth of the children met the criterion for acceptable level of nutrition knowledge (i.e., 70 percent correct response). After 10 weeks of school, slightly more than three-fourths of them scored at or above this criterion. Approximately 10 percent achieved perfect scores on the posttest. The largest increase in scores occurred in third grade classes whose teachers had the least training in how to use HONEY (notification group). Their pretest scores were comparable to those in other classes, but nearly all students in these two classes made perfect scores on the posttest of nutrition knowledge.

Analysis of covariance showed statistically significant differences by grade, teacher training, and an interaction of these two independent variables. Although posttest scores for kindergarten and third grade students were about the same (means of 15 and 16 with standard deviations of 2 and 3), kindergartners started out with higher scores. Thus, it appears that third graders learned more than kindergartners, $F(1,134)=37.81$, $p<.001$.

The frequency of criterion level performance on the posttest was 80, 60, and 80 percent for workshop, turnaround, and notification groups, respectively. Knowledge test performance of students whose teachers were in the turnaround training group improved less than in other groups, rising from 11 to 14 compared with posttest scores of 16 and 17 in the workshop and notification groups, $F(2,134)=42.62$, $p<.001$. These main effects appear to be explained by the performance of third graders whose teachers were in the notification group: these were the students who, although similar to other third graders at the time of the pretest, earned nearly perfect scores on the posttest, $F(2,134)=31.00$, $p<.001$.

Inspection of answers to specific test questions indicated improvement in all five of HONEY's curriculum content areas. Questions answered correctly most often on the posttests concerned sources of food, food choices, and meal planning. Although food handling was a topic teachers covered less often than the others, improvement in this content area was comparable to that in other areas rising from approximately 40 percent to 75 percent correct response. Percent correct in other areas averaged 60 on the pretest and 80 on the posttest. Scores were lowest for nutrients, averaging 35 and 60 percent correct on pre-and post-tests, and highest for food choices with averages of 70 and 90 percent correct on pre-and post-tests.

Children's Attitude Scores Did Not Change

Perhaps because attitudes were generally favorable at the beginning, most groups of students showed little change in performance on the test of nutrition attitudes.

Average Nummber of Points Scored on 33-point Nutrition Attitudes Test

	(n)	Kindergarten (64)		Third Grade (105)		Combined (169)	
		Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Workshop	(61)	25	23	27	25	27	25
Turnaround	(52)	23	24	25	24	24	24
Notification	(56)	25	26	27	29	26	28
Combined	(169))	24	25	27	26	26	26

Children's Attitudes Scores Did Not Change

Across groups, students averaged 26 out of a possible 33 points on both the pretest and the posttest of nutrition-related attitudes. The percent of students achieving criterion level performance (i.e., at least 24 points) on the posttest were 80, 60, and 60 in workshop, turnaround, and notification groups, respectively. Despite the fact that 80 percent of posttest scores met or exceeded the criterion for acceptable performance, average scale values in classes whose teachers were in the workshop declined slightly from 27 to 25. Those in classes where teachers had participated in turnaround training stayed the same at 24 points. But students in classes where teachers simply had been notified HONEY was available performed better on the posttest, earning 28 points compared with 26 on the pretest, $F(2,162)=9.97$, $p<.001$.

Although the overall scores showed no differences by grade, there were some interesting differences in the pattern of responses. Third graders were consistently less positive about tasting or trying new foods than were kindergarteners. There were three items in this category. For all three items approximately 40 percent of kindergartners and 35 percent of third graders responded. This difference was offset, hwoever, by the fact that third graders were more favorable than kindergartners toward eating spinach, broccoli, corn, foods that make you healthy, strong, and help build teeth and bones.

Children Did Not Choose Nutritious Snacks

When, at the close of the first 10 weeks of the fall semester, children were given an opportunity to select a food and a beverage from a snack tray in the classroom, less than a third made nutritious choices.

		Percent Choosing Grape Juice Instead of Red Soda Pop			Percent Choosing Celery/Cheese or Peanuts/Raisins Instead of Puff Chip or Presweetened Cereal		
Group	(n)	Kindergarten (168)	Third Grade (197)	Combined (365)	Kindergarten (168)	Third Grade (197)	Combined (365)
Workshop	(122)	23	33	29	8	23	16
Turnaround	(120)	9	41	26	5	27	17
Notification	(123)	24	25	24	3	54	30
Combined	(365)	18	33	26	5	35	21

Children Did Not Choose Nutritious Snacks

When, at the close of the first 10 weeks of the fall semester, students were given an opportunity to select a food and a beverage from a snack tray in the classroom, less than a third made nutritious choices. Of 730 selections (i.e., one beverage and one food choice for each of 365 children) only 173 (24 percent) were "good" choices. Kindergartners more often selected the less nutritious items than did third graders. Only 12 percent of kindergarten choices and 33 percent of third grade choices were nutritious selections.

Thirty-three percent of third graders and 18 percent of kindergartners chose fruit juice instead of soda pop. Thirty-five percent of third graders and only 5 percent of kindergarteners chose a fruit or vegetable snack instead of puff chips or presweetened cereal. These differences were statistically significant, chi-square(1)=9.2 and 44.6, $p<.05$ and .001 for beverage and food choices, respectively.

Because the majority (54 percent) of third grade students in classes whose teachers were in the notification group selected the fruit or vegetable snack, there was a significant main effect for training group, chi-square(2)=9.0, $p<.05$. It should be noted that all teachers in this cell reported using the Dairy Council or Heart Association materials in addition to HONEY, that student performance on the posttest of nutrition knowledge was nearly perfect in these classes, and that there was a slight increase in scores on the attitude scales for these students.

CONCLUSIONS

Children, especially kindergartners, need the kind of nutrition instruction offered with HONEY.

* Children's need for nutrition instruction was indicated by low scores on the pretest of nutrition knowledge and by the frequency with which they failed to choose nutritious snacks in a classroom food choices activity.

* Contrary to expectations, third grade students showed greater gains in knowledge and made better food choices than kindergartners indicating, perhaps, that effects of nutrition education are cumulative across years of instruction.

CONCLUSIONS

Children's need for the kind of nutrition instruction offered with HONEY is indicated by low scores on pretests of nutrition knowledge and by the frequency with which students failed to select nutritious snacks in the food choices activity. At the beginning of school, only about one-fourth of the students gave correct answers to at least 70 percent of the questions on the knowledge test. But after 10 weeks of school more than three-fourths of them met the 70-percent-correct criterion for acceptable levels of nutrition knowledge. Approximately 10 percent made perfect scores. These results show that children did not know but were able to learn things they need to know about nutrients, sources of food, food handling, and meal planning.

Despite improvements in their nutrition knowledge, the majority of children in this study failed to choose nutritious snacks from a tray offered in their classroom. Fewer than 25 percent of their selections were "good" choices. Kindergartners were especially prone to choosing items with relatively lower nutrient density. Only about 10 percent of their choices were good ones. This result was surprising because the research literature had suggested that younger children would choose more nutritious foods.

One possibility for explaining the infrequency with which children selected the better foods in this study is the "party" atmosphere of the activity. Children were told this was a "food tasting party" and may have taken this information as tacit permission to indulge in "party" foods. If they had made their selections in an atmosphere that emphasized taking nourishment rather than enjoying a novel experience, the children may have made more nutritious choices.

Differences in performance between kindergarten and third grade suggests that effects of nutrition education are cumulative across years of instruction. The fact that teachers, especially kindergarten teachers, were so receptive to HONEY and that so many of them reported using nutrition-related instructional materials from the Dairy Council or Heart Association may indicate they taught food and health even before development of essential elements and HONEY. If so, third grade students had the advantage of nutrition learning in earlier grades; i.e., they may have performed better because they had accumulated more hours of nutrition instruction over their years in school. This explanation reinforces the importance of pressing for effective nutrition instruction in kindergarten with repetitions and expansions in later grades.

Although teachers were generally receptive to HONEY, brief workshops and turnaround sessions did not have the expected facilitating effects on curriculum implementation or learner outcomes.

* Workshops and turnaround sessions did not result in better curriculum implementation or better learner outcomes than the notification method of teacher training.

* Better curriculum implementation did not result in relatively better nutrition knowledge, attitudes, and behavior of the children.

* Curriculum implementation was better in kindergarten classes, but learner outcomes were better in third grade classes.

Workshops and turnaround sessions did not lead, as had been expected, to better curriculum implementation or better learner outcomes. Implementation of HONEY was better in kindergarten than in third grade classes, irrespective of type of teacher training. Improvements in knowledge test scores and performance on the posttest of nutrition attitudes were best in third grade teacher-notification classes, while food choices were better in third grade than in kindergarten classes, irrespective of type of teacher training. As a strategy for promoting effective nutrition instruction, simply notifying teachers that nutrition education materials are available appears to be at least as effective as brief (i.e., one hour) workshops for the teacher.

Also contrary to expectation, better implementation of HONEY did not lead to better performance on knowledge tests, attitude scales, and food choices. Scores on posttests of knowledge and attitudes were toward the middle of the distribution in classes where HONEY had been used with greatest fidelity to the model, whereas test performance was best in classes where there was least compliance with the model for using HONEY. Food choices were uniformly better in third grade classes whereas curriculum implementation was most faithful in kindergarten classes. These data indicate that HONEY was not as effective as had been expected in promoting children's nutrition learning.

There are at least two alternatives for explaining these findings. The first possibility is that neither workshops nor HONEY are especially effective educational interventions. Results of other studies counterindicate this explanation. NET Program workshops have been shown in several evaluations to be reliably effective in improving teachers' knowledge and attitudes about nutrition instruction for young children. Previous studies of HONEY demonstrated that this curriculum was attractive to teachers in AISD and that its use was associated with improved scores on knowledge tests.

An alternative explanation is that factors other than teacher training and quality of the HONEY materials per se were major determinants of nutrition instruction and nutrition learning in this study. Recent nutrition education research identifies the teacher's personal interest in nutrition and support from school administrators as factors which have major impact on implementation of nutrition curricula in public schools. It may be that differences in nutrition learning observed in this study are explained by unmeasured differences in teachers' and administrators' interests in the nutrition learning of their students. Further research of these kinds of variables are needed in order to develop better strategies for improving the process of nutrition education.

RECOMMENDATIONS

Results of this study suggest that the most cost-effective strategy for promoting use of nutrition education materials in elementary schools is working more closely with other agencies to notify teachers that materials and training resources are available.

* The desirability of promoting statewide adoption of the HONEY curriculum should be reevaluated.

* Unless resources are available to invest in more than one hour of training, simple notification, rather than workshops, should be relied on as the strategy for promoting use of specific nutrition education materials in elementary schools.

* Possibilities should be explored for working more closely with the Dairy Council and Heart Association to provide elementary school teachers with training and materials they need to foster good food habits in their students.

* NET Program staff should participate in research and professional development activities that will lead to a more comprehensive understanding of factors that influence nutrition education and its effects on children's food choices.

RECOMMENDATIONS

Because HONEY did not prove to be as effective as was expected in kindergarten and third grade classes, it seems advisable for NET Program staff to reevaluate desirability of promoting statewide adoption of this curriculum and consider, as an alternative, working collaboratively with the Dairy Council and/or Heart Association. Nutrition learning appeared to be best in classes where HONEY was used least. Performance on posttests of nutrition knowledge, attitudes, and behavior were superior in third grade teacher-notification classes. All three teachers in this group reported using materials from Dairy Council and/or Heart Association.

A second reason for working more closely with agencies such as the Dairy Council or Heart Association in efforts to provide elementary school teachers with nutrition training and materials is finding that notification is as effective as brief workshops for promoting use of specific nutrition education materials. In order to notify as many teachers as possible about materials and training resources available through the NET Program as well as through other agencies, it will be advantageous for all concerned to use communication networks in each others organizations.

A final implication of results of the present study is that additional research and development are needed to describe a more comprehensive theory linking expenditure of NET resources with improved nutritional status of children. A fuller understanding is needed of factors that influence teachers' decisions to use particular materials and teach specific nutrition topics. More information also is needed about how children's nutrition learning experiences in the classroom influence their food choices. NET Program staff should be encouraged, therefore, to participate in research and professional development activities that will lead to better theory and thereby to better nutrition education and training practices.

Appendix E

EVALUATION REPORT

Participation in the Texas Nutrition Education and Training (NET) Program: October 1986 through September 1987

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Abstract

Data from annual participation reports for the Texas Nutrition Education and Training (NET) Program were submitted to goal-percentaging procedures to identify areas where special effort may be needed to encourage maximum participation in the program. Results indicated the program achieved 70 percent of its participation goals in 1987. Efforts to increase participation in the NET libary by child care food service personnel will help maximize the program's impact in 1988.

EXECUTIVE SUMMARY

The Texas Nutrition Education and Training (NET) Program acheived 70 percent of its participation goals with workshops performing especially well in contributing to an overall growth from 6,200 in 1985 to 10,900 in 1987.

Percent of Goal Attainment in 1987

	Children	Educators	FoodService	Average
GROUPS:				
Public Schools	100	70	85	85
Private Schools	--	100	50	75
Child Care	90	60	60	70
ACTIVITIES:				
Workshops	100	100	100	100
Library	90	50	30	55
Average	95	75	65	70

EXECUTIVE SUMMARY

The Nutrition Education and Training (NET) Program works cooperatively with the U.S. Department of Agriculture's other Child Nutrition Programs to optimize health and well-being of the Nation's children through improved nutrition. The degree to which the program is effective in accomplishing its education and training objectives and contributing to achievement of the collective goal of the Child Nutrition Programs depends in part on the amount and appropriateness of program participation.

Purpose and Procedures. This study was conducted to evaluate participation in the Texas NET Program during 1987. Participation goals were set for the year based on information about the number and distribution of persons reached during the baseline year of 1985, relative size of the program staff in 1985 and 1987, and designation of priority populations in the State Plan for 1987. Actual participation figures for 1987 were compared against the goals for each activity and for each target group. Average goal attainment was calculated for groups and activities as well as for the program as a whole.

Results and Conclusions. Participation in the Texas NET Program averaged 70 percent of goals set for 1987. There was an overall increase in number of participants despite decreases in the number of program staff. The unduplicated count of participants during 1987 was 10,900 compared with 6,200 in 1985 while staffing was down from 9.1 in 1985 to 7.9 in 1987. Relative participation by groups of educators and food service personnel was 45 percent schools and 55 percent child care.

Workshops performed extremely well attracting approximately twice as many participants in 1987 as in 1985. The one area in which participation fell far short of goals was in reaching food service personnel with NET library resources. The program averaged only 30 percent of its goals in this area.

Recommendations. By focusing efforts to increase participation in the NET library by food service personnel participating in the Child Care Food Program, the NET Program can continue to improve its synergism with other Child Nutrition Programs and maximize its impact during 1988.

BACKGROUND

Participation is a factor that strongly influences impact of the Texas Nutrition Education and Training (NET) Program.

Educators and food service personnel in schools and child care facilities participating in the Child Nutrition Programs are invited to participate in Texas NET Program activities . . . .

The Texas NET Program provides information, experiences, and resources in the fundamentals of nutrition, nutrition education, and food service management . . . .

Well informed educators and food service personnel provide improved opportunities for children to learn about and to practice healthy eating habits in schools and child care settings . . . .

BACKGROUND

The Nutrition Education and Training (NET) Program is designed to work cooperatively with the U.S. Department of Agriculture's other Child Nutrition Programs (e.g., the Child Care Food Program) to optimize health and well-being of the Nation's children through improved nutrition. The proximal objectives of the NET Program are to:

* encourage good eating habits and teach children the relationship between food and health;

* instruct educators in the fundamentals of nutrition and how to convey this information to children;

* train food service personnel in nutrition and food service management; and

* develop appropriate nutrition education materials and curricula.

To accomplish these objectives, NET Program staff develop and conduct workshops, provide lending library services, acquire and distribute nutrition education and food service management materials, and engage in special projects to promote nutrition learning in schools and child care facilities.

The impact these activities have on children's health and well-being depends on at least two things: a) the extent to which activities are successful in improving nutrition-related knowledge, attitudes, and behavior of program participants; b) the number of individuals in the target population who actually participate in program activities. If large numbers of school and child care personnel participate in activities that are effective in helping them provide improved opportunities for children to learn about and to practice healthy eating habits, the net effect will be changes in children's nutrition related knowledge, attitudes, and behavior leading to improvements in their nutritional status.

The number of persons reached through the NET Program is considered by USDA to be of paramount importance. It is used as a gate to program continuation. States granted NET Program funds are required to submit an annual report (the FNS-42) describing the numbers of children, educators, and food service personnel receiving nutrition education and training during the fiscal year. The report must be completed within 30 days after the close of the fiscal year in order for the state to receive an additional program grant.

Annual participation goals for the Texas NET Program are set relative to the "baseline" achieved in 1985 and adjusted to accommodate changes in program priorities and staff size. Fiscal 1985 was selected as baseline because a) evaluation studies showed the program to be both challenging and successful during that year, and b) all staff positions designated in the State Plan were filled at that time.

PURPOSE AND PROCEDURES

Data used in preparing the annual program participation report (FNS-42) were submitted to goal-percentaging procedures to identify areas where attention still is needed to maximize impact of the NET Program.

* Staff-to-participant ratios were calculated for a baseline year (Fiscal Year 1985)

* Actual staffing figures for 1987 were substituted in the ratios to set participation goals for each of the NET Program's major activities.

* Information about relative numbers reached during the baseline year was combined with information about program priorities for 1987 to set goals for reaching different target groups.

* Numbers of persons actually reached in 1987 were compared against the goals and averages calculated across groups and activities to identify areas of strength and areas still needing attention.

PURPOSE AND PROCEDURES

Information about level of effort devoted to workshops, library services, and special projects in 1985 was used to compute a staff to participant ratio for each activity. Staffing levels in 1987 then were substituted in the ratios to calculate participation goals (staffing and participation figures for workshops and materials distribution were combined because materials are distributed only to those who have participated in the workshops). During 1987, special projects involved individuals who were counted as workshop participants and so these figures also were merged into those for workshops.

During 1985, more than 2000 individuals participated in NET workshops and nearly 4000 people were reached through the NET library. There were approximately 6 full-time equivalent NET staff positions in support of workshops (coordinator, specialist, consulting nutritionists, and clerical staff) and 2.5 positions in support of the library. The resulting staff-to-participant ratios were 400:1 for workshops and 1500:1 for library resources.

Because of budgetary and organizational constraints, the NET Program staff was smaller in 1987. There were only 4.5 full-time equivalent staff positions in support of workshops and 2.25 for the library. By substituting these figures in the staff-to-participant ratios, overall goals were set at 2000 for workshops and 3300 for the library.

Information about program priorities was used to set goals for different target groups. In 1987, the State Plan stated that emphasis would placed on reaching public schools with NET resources. During fiscal 1986, two of the NET Program's workshops were certified for advanced academic training of public school teachers. Goals were adjusted to accommodate the increase in participation within this group expected in consequence of this certification.

Another factor considered in setting goals within the population groups was the special series of workshops conducted during 1987 to correct common problems detected in reviews of the Child Care Food Program during 1986. These workshops were principally for food service personnel in child care settings. The relative percent of child care staff to be reached in workshops was adjusted accordingly.
Finally, goals were set for children's direct participation in NET workshops during 1987. In the past, the NET lending library collection was the program's only direct reach to children. But during 1987, the Honey Bees Buzz for Good Nutrition workshop was developed for children.

Actual participation figures for 1987 were compared against the goals for each activity and for each group in order to calculate the average percent of goal attainment.

RESULTS

Participation in the Texas NET Program averaged 70 percent of goals set for 1987.

	Public Schools				Private Schools				Child Care				Others		Average
	85	87	G	%	85	87	G	%	85	87	G	%	85	87	%
WORKSHOPS															
Children	0	1624/100	=	100	0	-			0	226/100	=	100			100
Educators	64	767/200	=	100	271	126/100	=	100	1241	839/600	=	100			100
Food Service	5	508/100	=	100	233	111/100	=	100	264	997/600	=	100			100
Others													238	234	
LIBRARY															
Children	864	4450/660	=	100	365	-			1289	510/660	=	80			90
Educators	85	139/330	=	40	0	3/0	=	100	102	56/330	=	20			50
Food Service	356	110/165	=	70	0	0/165	=	0	79	153/660	=	20			30
Others													755	77	
AVERAGE				85				75				40			70

85 = number of participants in 1985 87 = number of participants in 1987 G = goal for 1987

RESULTS

NET workshops were rousingly successful in achieving and, in fact, substantially exceeding participation goals in all categories. Despite decreases in staffing (6 in 1985, 5.4 in 1986, and 4.5 in 1987), workshops accommodated more than twice as many participants in 1987 as in preceding years (2300 in 1985, 2200 in 1986, 5500 in 1987).

The 1800 children who participated in **Honey Bees Buzz for Good Nutrition** workshops accounted for approximately half the gain in workshop participation. Other areas in which there was notable rise in participation between 1985 and 1987 were public school educators, public school food service personnel, and child care food service personnel. Approximately 45 percent of educators and food service personnel participating in NET workshops during 1987 were staff of public and private schools and 55 percent were child care personnel.

The NET Program's lending library collection was slightly less successful in achieving its participation goals. Across groups, the library averaged 50 percent goal attainment. Approximately 90 percent of the 5400 individuals reached with library resources during 1987 were children. The average was 90 percent goal attainment in this area.

Areas where the library fell far short of its participation goals were in reaching food service personnel in private schools and both educators and food service personnel in child care situations. The average was less than 20 percent goal attainment in these areas. Approximately 55 percent of educators and food service personnel reached with library resources were staff of public and private schools and 45 percent were child care personnel. The number of "others" (i.e., those outside NET's priority populations) using the library declined substantially from more than 700 in 1985 to fewer than 100 in 1987.

Across activities, the program averaged 85 percent goal attainment in public schools, 75 percent in private schools, and 70 percent in child care. In reaching children there was nearly 100 percent goal attainment. In reaching educators and food service personnel, the average was 70 percent goal attainment.

Overall participation in the NET Program increased again in 1987. Totals for 1985, 1986, and 1987 were 6200, 9700, and 10900, respectively. Groups in which growth was most notable were children and food service personnel: twice as many were reached in these groups in 1987 as in 1985 (growth from 2500 to 6800 for children and 940 to 1900 for food service personnel). Relative participation by target groups was 45 percent from public and private schools and 55 percent from child care situations.

Efforts to improve the library's reach to food service personnel in child care settings will help maximize impact of the Texas NET Program in 1988.

Goals for 1988

	Public Schools n	Public Schools p	Private Schools n	Private Schools p	Child Care n	Child Care p	Totals
WORKSHOPS							2000
Children	100	(.05)			100	(.05)	
Educators	200	(.10)	100	(.10)	600	(.30)	
Food Service	100	(.05)	100	(.05)	600	(.30)	
LIBRARY							3300
Children	660	(.20)			660	(.20)	
Educators	330	(.10)			330	(.10)	
Food Service	165	(.05)	165	(.05)	660	(.20)	

n = number projected p = proportion of projected total

note: proportions do not add to 1.00 because of allowances made for participation by "others"

CONCLUSIONS AND RECOMMENDATIONS

During 1987, the Texas NET Program made dramatic improvements in its reach to children and to food service personnel. Participation in these groups was more than twice what it was in 1985. And, despite substantial reduction in NET Program staffing (down from 9.1 in 1985 to 7.9 in 1987), participation increased by 50 percent (up from 6200 in 1985 to 10900 in 1987).

A large part of this growth probably can be attributed to increasing cooperation among related programs. The number of children reached with library resources soared when members of the Texas Agricultural Extension Service began using the collection as a resource to support presentations they make to children in public schools. The jump in number of food service personnel reached in NET workshops during 1987 probably can be traced to the special series of workshops developed and conducted to address problems identified in the Child Care Food Program.

Results of the present study converge with those of other studies to suggest that emphasis should be placed on increasing use of the NET lending library collection by child care personnel. This was the one area where participation fell far short of goals. One possibility for increasing use of the collection in this population is to augment workshops to include exercises that allow child care staff to practice selecting and ordering materials to support their nutrition education and food service management activities. The potential effectiveness of this alternative is heightened by the tremendous success workshops are having in attracting increased participation by food service personnel in child care settings.

Two other factors should be considered in setting participation goals for 1988. The first is that, although overall staffing will remain at approximately the same level as in 1987, the number of program nutritionists available to conduct workshops during 1988 will be fewer than in previous years. It is unreasonable to expect, therefore, that the huge increase in workshop participation during 1987 can be supported during 1988. The second factor to be considered is a shift in program priorities. In its efforts to improve synergism with other Child Nutrition Programs, NET's plans for 1988 and 1989 emphasize service to facilities participating in the Child Care Food Program. The goal is to have 60 percent of NET's participants be from child care settings and 40 percent from public and private schools. This pattern is approximately what was achieved during 1987.

For these reasons, it is recommended that the NET Program's participation goals for 1988 be the same as those used in 1987. By continuing to work cooperatively with other Child Nutrition Programs administered through the Texas Department of Human Services, the NET Program can make steady progress toward the goal of reaching all children in the state with opportunities to learn about and to practice healthy eating habits.

TEXAS NUTRITION EDUCATION AND TRAINING (NET) PROGRAM

Despite staffing constraints, productivity was high, participation increased, and the program continued to have significant positive effect in Fiscal 1987.

	FY85	FY86	FY87
Resources			
BUDGET	294,060	294,060	295,860
STAFFING			
Coordinator	1.000	.333	.125
Program Specialists	2.000	1.500	2.000
Evaluator	1.000	1.000	1.000
Clerical Support	3.000	2.667	3.000
Consulting Nutritionists	2.000	1.900	1.800
	9.000	7.400	7.925
Activities			
WORKSHOPS			
Developed	2	2	3
Conducted	165	145	135
LIBRARY			
Acquisitions			500
Items Circulated/Month	70	100	100
Borrowers/Month	6	25	20
Catalogs Distributed	10,000	12,000	680
MATERIALS			
Acquisitions	5	5	15
Items Distributed	9,700	10,800	12,800
SPECIAL PROJECTS			
Mini-grants/Development Contracts	3	3	2
Evaluation/Needs Assessment Studies	6	7	6
Participation	6,200	9,700	10,900

Program Effectiveness	Outcome Indicators Monitored		
1985 through 1987	Knowledge	Attitudes	Behavior
WORKSHOPS			
Food...Early Choices	+ /	+ + **	
Nutrition & Preschool Child	+ **	+ **	- **
Menu Planning/Kitchen Economy	+ **	+ + **	- /
Kitchen Math/Food Purchasing	+ **	+ **	
Off to a Good Start/Day Care	+ **	+ + **	+ **
Sanitation and Health	+ **	+ + **	
Advanced Menu Planning	+ + **	+ **	- /
LIBRARY			
Workshop Coverage	+	+	-
Journal Articles			+ /
Distribution of Catalog			+ **
Lending Procedures		-	+
MATERIALS			
Use in Schools		+	- /
Effects on Children	+ **	+ /	-
Use in Child Care			+

Criterion referenced analyses: + +=ideal +=acceptable -=needs improvement
Statistical comparisons: ** = significantly positive / = nonsignificant